DOCUMENT RESUME

ED 345 884 PS 020 662

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TITLE Early Childhood Education. Volume II: Instructional Activities and Handouts. Curriculum and Instruction Specialty Option Workshop Leader's Guide.
INSTITUTION Chapter 1 Technical Assistance Center, Indianapolis, IN. Region B.
SPONS AGENCY Department of Education, Washington, DC.
REPORT NO TAC-B-235
PUB DATE Feb 91
CONTRACT LC88023002
NOTE 162p.; For volumes I and III, see PS 020 661-663.
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS Administrators; *Child Development; Cooperative Learning; *Early Childhood Education; *Inservice Education; *Instructional Materials; *Integrated Curriculum; Mathematics Instruction; Play; Science Instruction; Staff Development; Student Evaluation; Teachers; *Workshops
IDENTIFIERS Education Consolidation Improvement Act Chapter 1; Emergent Literacy

ABSTRACT

This document is the second volume of a three-volume set comprising a workshop leader's guide designed to help in-service providers conduct workshops on early childhood education for teachers, administrators, and others associated with Chapter 1 programs. The guide contains step-by-step procedures for preparing, organizing, and presenting a full-day comprehensive workshop. To allow flexibility in workshop presentation, workshop variations and alternate activities are suggested; in addition, the 10 sections in the guide are designed so that they can be expanded or contracted. Volume II of the set contains Sections 6 and 7 of the guide, includes instructional activities and handouts. Section 6, "Handout Masters--Instruction," contains 11 handout masters on the topics of cooperative learning, reading aloud, dramatics, music, art, movement, mathematics, emergent literacy, science instruction, and class schedules. Section 7, "Handout Masters--Evaluation," contains 10 handouts related to evaluation in early childhood education. The handouts include: (1) a quick reference guide to child development; (2) position statements by educational organizations regarding school readiness, accountability, evaluation standards, and standardized testing; (3) principles for kindergarten entry and placement; (4) a learning environment checklist; and (5) a sample portfolio assessment for young children. (BC)

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Curriculum & Instruction Specialty Option Workshop Leader's Guide

Early Childhood Education

Volume II: Instructional Activities and Handouts

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Curriculum & Instruction
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Workshop Leader's Guide

Early Childhood Education

Volume I: Workshop Essentials
Volume II: Instructional Activities & Handouts
Volume III: Guidelines, Standards, & Model Programs

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Chapter 1
Curriculum &
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Curriculum & Instruction
Specialty Option
Workshop Leader's Guide

EARLY CHILDHOOD EDUCATION

Volume I: Workshop Essentials
Volume II: Instructional Activities & Handouts
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This workshop guide was developed by the staff of the Curriculum & Instruction Specialty Option, Region B Technical Assistance Center, under Contract No. LC88023002 with the U.S. Department of Education. *Any findings, opinions, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the U.S. Department of Education.*

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February 1991

Acknowledgements

The staff of the Curriculum and Instruction Specialty Option would like to thank the many other individuals whose assistance and feedback made the production of these materials possible.

First, we gratefully acknowledge the information provided by TAC/R-TAC staffs around the country for their suggestions and feedback concerning their needs in this area as well as for specific critiques concerning additions, deletions, and other changes suggested to earlier drafts.

Next we would like to thank the many classroom teachers and other LEA & SEA staff members who gave of their time and knowledge to pass along additional suggestions concerning ways to best meet the specific needs of their students. Many of their comments and suggestions are included in the "Notes From the Field" section of the handouts in Section 6 of Volume II. We would like to thank:

Kentucky:

Maritta Belcher
Robinson Creek School
Robinson Creek, KY

Helena A. Goodman
Millard Elementary
Pikeville, KY

Carolyn S. Looney
Elkhorn City Elementary
Elkhorn City, KY

Phyllis Lowe
Johns Creek School
Pikeville, KY

Cheryl McCoy Slater
Varney Elementary
Toler, KY

Maryland:

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Tubman Elementary

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Coleen Mann
Emery Elementary

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Gloria McGeachy
Webb Elementary

Valerie Pasha
Aiton Elementary

Aretta Roberts
Shadd Elementary

Louise Thurston
Ludlow Elementary

Brenda White
Blow Elementary

Patricia Young
Green Elementary

We gratefully acknowledge the assistance of the following SEA/LEA staff for helping arrange field reviews of our materials: Ms. Anne Pitts and Dr. Judine Johnson (District of Columbia Public Schools), Ms. Donna Arquilla (Bladensburg, MD), Dr. Guinevere Berry (Charles Carrollton in Baltimore, MD), and Ms. Becky Francis (Pike County Kentucky Schools). We wish to thank Ms. Donna Ormiston and Dr. Sal Mowery from Region B TAC and Region 2 R-TAC for conducting field tests and also gratefully acknowledge the assistance of Ms. Suzi Peterson in creating earlier versions of some of the transparency and handout masters, and Ms. Madeline Spangler and Ms. LaDonna Gerbick for their assistance in typing numerous drafts of these materials.

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Early Childhood Education

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Curriculum &
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Learning Through Child's Play

What is Play?

Play is one of the most important aspects of a young child's life. Early childhood specialists have discovered that not only do children learn while playing, but play is one of the most effective kinds of learning known (Marzollo and Lloyd, 1972). In contrast to adults, almost everything a child does, when she or he has not been asked to do something else, is play (Einon, 1985).

Play is the spontaneous or organized activity of children. It is at the heart of the preschool curriculum. Play aids in the development of physical, intellectual, and social skills. Sher (1976) offers four kinds of play: 1) manipulative play, which involves handling equipment, 2) physical play, which involves large muscle activity, 3) dramatic play, which enables a child to assume a role and act it out in informal situations, and 4) games, which for the young child should include everyone and have simple rules.

Play takes place in a relaxed atmosphere with no undue restrictions. Play gives children the freedom to experiment, to make mistakes, and to practice again and again the skills that they have learned. In play, there are no failures or critical evaluations (Zieher, 1986).

Children are learning even as they play. For example, when two types of kindergarten groups-- play curriculum and direct teacher instruction-- were compared, the kindergarten play group scored better than the direct instruction group in 11 of 16 academic readiness skill sections tested (Gallegos, 1983).

Elements of Play

Zieher (1986) has identified the following as criteria for choosing a play activity.

The activity should:

- be process (not product) oriented;
- be self-directed and self-monitored by the child; be uniquely performed by each child;
- be experiential, involving the senses, and including motion;
- have no "rights," no "wrongs," no certain outcomes, no failures;
- have verbal cues/prompts from the adult, but have minimal rules and "cookbook" directions;
- require a minimum of special equipment;
- promote repetition, expansion, variation;
- have multi-level, multi-use features;
- provide the child with the opportunity for interactions with peers, adults, and the environment;
- generate laughter, smiles, exercise, fun, and the desire to share the activity.

Classification Systems of Play

Many theorists and researchers have proposed a variety of categories/stages as a means of organizing and understanding the relationship between play and development. Although each child grows and develops at his or her own rate, each child tends to progress through varying stages or levels. Physical development in play follows the child's developing musculature and strength and increasing refinements of both large-motor and fine-motor skills. Zieher (1986) has summarized Piaget's cognitive levels of play and Parten's social stages of play as follows.

Cognitive Levels of Play

Practice Play
Parallels Piaget's sensorimotor stage of development. It usually consists of repeating various learned behaviors, apparently to provide pleasure and not to attain a specific goal.

Cognitive Levels of Play (Cont.)

Symbolic Play

Parallels Piaget's preoperational stage of development. The child's ability to use mental symbols to represent experience increases; pretend or make-believe play begins. The child's increased language skills allow him or her to imitate and recall past experiences.

Games With Rules

Parallels Piaget's concrete operational stage; requires the ability to accept prearranged rules and adjust to them, and to control actions and reactions within the given limits. This stage involves cooperative and competitive activities.

Social Stages of Play

Unoccupied Behavior

Child engages in random behavior such as watching something momentarily; touching, mouthing, or looking at objects, but not really playing or engaging in play limited to the child's own body.

Onlooker

Child spends most of the time observing others from the "sidelines"; often talks to other children or shows interest in the activities, but doesn't actually enter into play.

Solitary Independent Play

Child plays alone with toys different from those used by children within speaking distance and makes no effort to get close to other children.

Parallel Activity

Child plays independently, but the child is beside rather than with other children; uses toys similar to those of children nearby.

Associative Play

Child plays with other children in a common activity, forming a specific group that may exclude other children. Each child does as he or she chooses, engaging in similar or even identical activity. There is no division of labor.

Cooperative or Organized Play

Child plays in a group organized for some play purpose (product, drama, competitive games). Labor is divided and each child takes on a different role. One or two children usually dominate, becoming leaders.

The Adult's Role in Child's Play

When play is seen as an educational experience in which children imitate, explore, test, and construct their environment in order to come to know the world around them, the role of the adult (teacher, parent, or caregiver) takes on special meaning. It is the adult who creates the atmosphere conducive to play, provides the materials for play, and offers the opportunity for interaction between the child and the materials. The roles the adult assumes in facilitating educational play include those of:

Planner - planning the environment; arranging effective floorplans, including a variety of activity centers and designing specific play activities within each center.

Model - modeling common usage of materials/games when necessary, although not limiting or structuring it to only one use.

Observer - evaluating the child's developmental level and growth from behaviors elicited during play interactions.

Guide - guiding the child to specific activity centers to achieve balanced growth in all areas of development; both to build on strengths and to strengthen areas needing improvement, or to introduce new variations of materials/games to expand the child's knowledge.

A supportive adult can respond to the child's initiations and expand the scope of play while still allowing the child to lead (Brown and Briggs, 1989; Smith, 1987; Zieher, 1986).

Why Play?

Children play to have fun. They can play alone or with others. Play gives them a chance to get in touch with each other and to enjoy each other. The same elements that motivate children to play-- enjoyment, curiosity, challenge, and discovery-- are the elements that motivate children to learn. Play is how children come to know the world around them, through interactions that imitate, construct, test, and explore (Zieher, 1986).

Play . . . a window to the child's mind

IMITATE

The developing child is like an apprentice. In play, the child comes to know the world by copying the attitudes, behaviors, and speech patterns of the significant people in his or her life. The child also imitates or repeats his or her own behavior.

CONSTRUCT

The child becomes a "builder," putting things together in an attempt to organize his or her own experiences. As the child creates models that represent real things and engages in imaginary activities, each learns to make decisions, to solve problems, to answer questions, to meet goals, and to deal with frustrations.

TEST

The child is motivated by a "What will happen if . . . ?" attitude, testing to find out the effects of his or her behavior. Determining the outcome of one's behavior, whether it will be accepted or rejected, helps the child learn to deal with emotions and to control impulses.

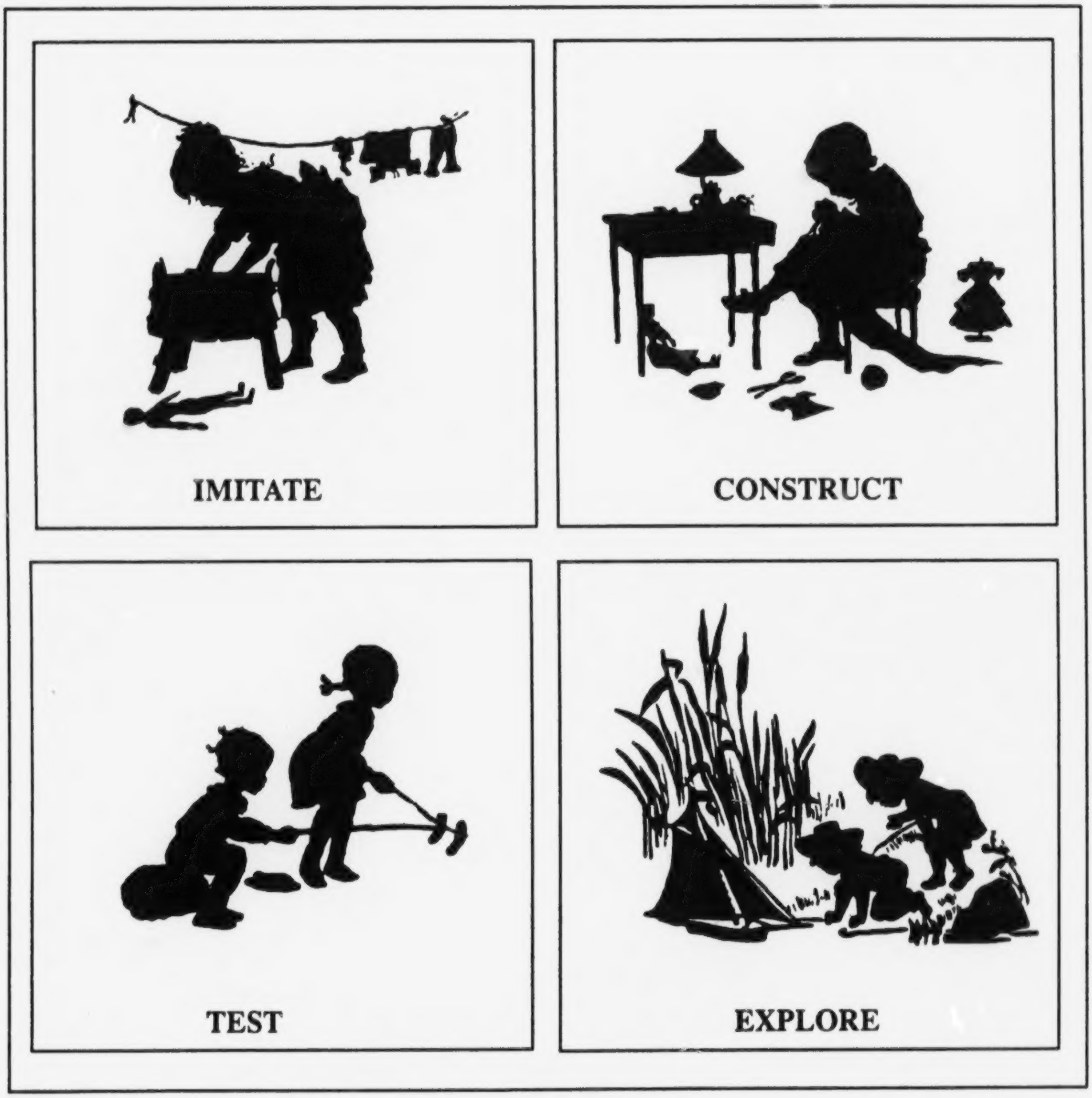
EXPLORE

In play, the child seeks to know and understand the outside world by analyzing how things work, how they came to be the way they are, and what they can do, thus discovering the relationships among the people, objects, events, and situations in his or her environment.

How Children Come to Know the World Around Them

Adapted from C. Zieher. (1986). *An invitation to play* (Bulletin No. 7044). Madison, WI: Wisconsin Department of Public Instruction.

Play . . . a window to the child's mind



How Children Come to Know The World Around Them

Play in Action

The following descriptions are examples of children at play.

Imitate

John is playing bus driver. Peter and Jake "board the bus" and John reminds them to "put on your seatbelts." John goes through the actions of turning the steering wheel and pushing the floor pedals. He stops, turns around and says, "We're here. Watch your step."

Construct

Maria and Ashley are playing with blocks. Maria builds one tower and Ashley builds another tower near it. Then Maria takes one long block and places it across the two towers. Ashley claps while Maria announces, "It's a bridge."

Test

Samir goes into the library corner. He takes a book, looks at it right side up, then turns the book upside down, and pages through it again. He looks around to see if anyone is near and calls to Sean to "Come see this funny book."

Explore

Krystal is at the sandbox. She spoons some sand into a colander and watches it sift onto the ground. Next, she spoons in more sand, shakes the colander rapidly from side to side, and shouts, "It's raining, it's raining."

Sample Play Activities

Play activities can be developed using very simple, everyday materials-- or many times, they need no materials at all. Here are some creative play activities that children can enjoy doing (Einon, 1985).

Create an **obstacle course** with household or classroom items.

Cut cloth into strips for **pretend bandages**. Have the child bandage his/her favorite toy and help with creating a story about how the wounds came about.

Pipe Cleaner Fun: Use pipe cleaners to make figures, shapes, and structures. Then ask the child to make up a story about the figure. Adults may join in for variation and fun.

Art Trick: Have the child paint one-half of a piece of paper, then fold the paper in half with the painted sides together, press firmly, then unfold to reveal a duplicated image.

Silly Talk: Make up a nonsense sentence, such as, "For breakfast we had fish with hats on." Ask the child to reply with an equally silly format, "For lunch we had eggs with shoes on." Continue the exchange in this fashion.

Curriculum Generated from Play

In the course of play, the beginnings of concepts are laid down that will be formally taught later on as the subjects of language arts, reading, writing, math, science, social studies, art, music, and physical education. Skills taught in early childhood overlap subject areas. For example, themes discussed in children's books often generate play activities, either directly (i.e., acting out *Goldilocks and the Three Bears* following the story), or indirectly (i.e., color mixing following the story *Little Blue and Little Yellow*, by Leo Lionni). Each day the young child should be able to choose to play in a variety of different centers, ranging from art, blocks, computer, dramatic/ pretend, games, and housekeeping, to library, math, music/listening, sand table, science, water table and writing. In every activity center, there should be an opportunity for children to expand their knowledge in tandem with growth in social and physical skills.

At younger ages, teachers can encourage early reading most effectively and appropriately through informal or incidental, rather than formal, learning (Goetz, 1983). Play is an ideal setting for young children to practice and extend emergent literacy abilities. Young children are likely to engage in more voluntary literacy behaviors during play periods when literacy materials are introduced and made readily available (Morrow and Rand, 1991).

The following handout contains a list of literacy props that can be used to enrich young children's literacy behaviors during play (Neuman and Roskos, 1990). By supplementing early childhood play centers with literacy and numeracy props, children will begin using reading and writing in more purposeful and complex ways. The ready availability of literacy and numeracy materials seems to spontaneously prompt their use by children. While playing in centers focused around such themes as post office, library, kitchen, or office, children learn by manipulating materials involving reading, writing, and numbers as they are used in real life. This is one of the ways adults can "set the stage" for particular learning experiences -- they can make materials available to the children and give them opportunities to use them during play.

Items for Preschool Learning Centers That Promote Numeracy and Literacy

The following suggestions for enriching preschool learning centers came from Susan B. Neuman and Kathy Roskos' article, "Play, Print, and Purpose: Enriching Play Environments for Literacy Development," which was printed in the November 1990 issue (v. 44, no. 3, pp. 214-21) of *The Reading Teacher*. The article also includes floor plans designed for enriched centers.

Post Office Center

Envelopes of various sizes
Assorted forms
Stationery
Pens, pencils, markers
Stickers, stars, stamps, stamp pads
Post Office mailbox
A tote bag for mail
Computer/address labels
Large plastic clips
Calendars of various sizes
Small drawer trays
Posters/signs about mailing

Library Center

Library book return cards
Books to read to dolls/animals
Stamps for marking books
A wide variety of children's books
Bookmarks
Pens, pencils, markers
Paper of assorted sizes
A sign-in/sign out sheet
Stickers
ABC index cares
Telephone & telephone books
Calendars of various types
Posters of children's books
File folders

Kitchen Center

Cookbook
Blank recipe cares
Labelled recipe boxes
Small plaques/decorative magnets
Personal stationery
Food coupons
Grocery store ads/fliers
Play money
Empty grocery containers
Small message board
Calendars of various types
Notepads of assorted sizes
Pens, pencils, markers
Large plastic clips
Telephone books
A real telephone
Emergency number decals

Office Center

Calendars of various types
Appointment book
Message pads
Signs (e.g., open/closed)
Books, pamphlets, magazines
File folders
Racks for filing papers
In/out trays
Index cards
Business cards
Assorted forms
Play money
Ledger sheets
Typewriter or computer keyboard
Clipboards
Post-its/address labels
Note cards
Large plastic clips
Pens, pencils, markers
Trays for holding items

Play as a Diagnostic Tool

Through observations of a child at play, levels of competency in various developmental areas can be determined. Self-help and motor skills, social and emotional skills, language skills, and cognitive skills, all lend themselves to on-going assessment through observation as the child moves through the various activity centers of: art, blocks, computer, dramatic/pretend actions, games, housekeeping, library, listening, math, and science. A general assessment and a specific development checklist are two ways of informally assessing young children. Valuable information can be obtained by observing a child's play preferences as he or she interacts with materials and with people. Questions for a sample play assessment are provided in the accompanying handout.

Observation of children's play can also be used to informally assess children's performance in various developmental areas. A partial list of some of the areas and related abilities appears below. The teacher can use the child's play preferences and competency levels to determine further activities to which she/he should guide the child in order to extend the child's abilities, or to provide the child with further practice in particular areas.

Daily Living - Play can train small hands in the muscular skills needed for day-to-day activities in school, including: self-care, fine motor skills, independent behavior, etc.

Spoken Language - Frequent language interactions with friends and adults during play increases the child's ability to communicate orally. Researchers have found that preschoolers whose play includes lots of make-believe and fantasy have more advanced language skills (Piers, 1980).

Reading - Being read to frequently can encourage a love of books and can lead to an early understanding of the communicative function of print. In addition, it provides familiarity with some common words, phrase structures, and other conventions used in print.

Writing - Play can help develop the eye-hand coordination needed later for writing. Scribbled messages and marks can be orally interpreted for the receiver.

Mathematics - Playing with objects can teach a basic sense of number, leading to one-to-one correspondence and the beginning concepts of number recognition (both symbol and quantity), counting, and the quantitative relationships underlying computation.

Play as a Diagnostic Tool (Cont.)

Personal/Social Behavior - Play helps children practice and develop their control of affective emotions. Fantasy play can let them act out a range of emotions in a safe environment. Through play activities children can develop self-control, self-esteem, positive attitudes, social skills, and concentration.

Some schools are already using "play" as a formal diagnostic tool to guide children's school experiences. For example, students at the Key Elementary School in Indianapolis spend one 35-minute period a day, three days a week, in the "Flow Room." Games are available from different skill levels corresponding with Howard Gardner's seven different intelligence areas. The teacher carefully tracks each child's play preferences and observes what the child's strengths appear to be and what kinds of activities motivate the child. This information is then used in the regular classroom to guide their learning. The children report that they are challenged playing the games and like the fact that no one interrupts or distracts them. They view the game room as a place to choose what they want to play and a way to escape from the tensions of school or home (Benton Center Report, 1990).

Play is Essential

Play is an essential ingredient for learning in a child's life (Hartley, 1971; Piers, 1980). Play gives children the freedom to make choices and a sense of control over their world. They can choose with whom they want to play, what to play, when to play, where to play, how to play, and how long to keep playing in any specific play situation. Through play the child imitates, explores, tests, and constructs his or her world. The adult (teacher, parent, or caregiver) can assist by giving the child access to many different kinds of materials (books, blocks, sand, paints, water, etc.), with varying dimensions (color, size, shape), textures (soft, rough), smells, sounds, and tastes. In addition to planning the play environment, the adult plays as a role model, observes, and guides the child, presenting opportunities for physical, social, and cognitive growth. Play can serve as a rich source of active learning.

References on Play

A key to intrinsic motivation. (Summer 1990). *Report from the Center*, 3 (1), 1-3. [Publication of the Benton Center for Curriculum and Instruction, University of Chicago.]

Brown, D. L., & Briggs, L. D. (Spring 1989). Free play in the early childhood classroom. *Reading Improvement*, 26 (1), 12-14.

Einon, D. (1985). *Play with a purpose: learning games for children 6 weeks-10 years.* New York: Pantheon Books.

Gallegos, M. (January 27-29, 1983). *Learning academic skills through play.* Paper presented at the Annual Meeting of the Southwest Educational Research Association, Houston, TX.

Goetz, E. M. (May 2-6, 1983). *A preschool environment for emergent reading.* Paper presented at the Annual Meeting of the International Reading Association, Annaheim, CA.

Hartley, R. E. (November 1971). Play, the essential ingredient. *Childhood Education*, pp. 80-84.

Marzollo, J. & Lloyd, J. (1972). *Learning through play.* New York: Harper & Row, Publishers.

Morrow, L. M. & Rand, M. K. (February 1991). Promoting literacy during play by designing early childhood classroom environments. *The Reading Teacher*, 44 (6), 393-402.

Neuman, S., & Roskos, K. (1990). Play, print, and purpose: Enriching play environments for literacy development. *The Reading Teacher*, 44 (3), 214-221.

Piers, M. (1980). *The gift of play and why young children cannot thrive without it.* New York: Walker and Company.

Sher, A. (1976). *The importance of play.* (ERIC Document Reproduction Service No. ED 248964)

Smith, D. (1987). *A practical guide to play, Piaget, and language in preprimary hearing impaired programs.* Detroit, MI: Detroit Public Schools, Michigan Department of Special Education.

Zieher, C. (August 1986). *An invitation to play: Teacher's guide.* Madison, WI: Wisconsin Department of Public Instruction.

PLAY ASSESSMENT

The following list of questions can be used to assess motivation and development while observing a child at play. The observations can be done for short periods of time (10-15 minutes) several times during the day, over a period of several days. Routine observations and documentation at least three to four times a year will provide the teacher with valuable information which can be used to design new activities or guide the child to specific areas. Please refer to the handout "Learning Through Child's Play" for further information.

Observer: ______________________________

Child's Name: ___________________________ Date: ____________________

1. What play activity does the child choose first each day? Is it the same activity each day?
2. How does the child choose his/her play centers (self-motivated, drawn by peer, guided by teacher)?
3. What are the child's favorite activities? Which activity centers does the child go to frequently?
4. Are there any activity centers/areas in the classroom to which the child never goes?
5. How easily does the child choose activities? To what degree is the child an observer before choosing an activity?

Play Assessment (Cont.)

6. When in a play activity, how does the child handle materials (i.e., with purpose, coordination)?

7. How resourceful is the child in expressing needs and getting them met?

8. To what degree does the child focus on a set activity? How easily distracted is he/she?

9. Is the child able to complete one activity, including clean-up, before going to the next?

10. How does the child show pride in accomplishments?

11. In what ways does the child express affection to peers?

12. In what ways does the child express hostility to peers?

13. How much of the child's play is done alone? With one friend? In a small group (3-5 people)?

14. How is the child's play different when he/she is alone? With a teacher? In a group?

15. Does the child have a favorite friend? If so, who?

16. To what extent does the child show leadership in play activities with others?

17. To what extent is the child able to follow the lead of others?

The Who, What, When . . . of Cooperative Learning

WHO Cooperative Learning is for all students, all ages, all grade levels and all levels of ability, from preschool through graduate school. Students who work in cooperative groups learn important social skills which facilitate cooperation. With these skills, students relate appropriately to others who are different from them in terms of social background, physical condition, intellectual skill, or social proficiency. Research shows that the consistent use of cooperative teaching methods in the classroom helps students to learn and to care about others. Students learn to not only tolerate individual differences, but to value them as well.

WHAT Cooperative learning is a systematic model for helping students work in groups to consistently:

- Learn their subject matter
- Complete tasks
- Include all group members in their work
- Solve group problems with minimal teacher assistance
- Resolve differences among themselves
- Enjoy the process of working together

WHEN Cooperative learning procedures are appropriate for all levels and content areas. These procedures help students practice skills and explore concepts which are a part of the established curriculum for their grade and subject area. At the same time children in cooperative groups are learning important social skills which will facilitate cooperation. These social skills can then be reinforced in other areas of the student's life.

WHERE No special area or equipment is needed for cooperative learning. The regular classroom is a perfect setting for cooperative learning. Chairs and/or desks may be arranged to facilitate the group. The students learn to do this as part of following directions and working together.

WHY COOPERATIVE LEARNING?

Students can compete with each other, ignore each other, work independently, or work together cooperatively. The extensive research comparing these student-student interaction patterns clearly suggests that cooperation among students produces higher achievement, more motivation to learn, more acceptance of differences among students, higher self-esteem, and a number of other outcomes than do competition or working individually. An effective way to introduce the advantages of cooperative learning is to use Leo Lionni's storybook, *Swimmy*.

In cooperative learning situations there is a positive interdependence among students' goal attainments; students perceive that they can reach their learning goals if and only if the other students in the learning group also reach their goals. Thus, students seek outcomes that are beneficial to all those with whom they are cooperatively linked. Students discuss the material with each other, help one another understand it, and encourage each other to work hard.

Notes From the Field

Remarks about cooperative learning from teachers from rural and urban schools in Prince George's County, Maryland; Elkhorn City, Kentucky; and British Columbia, Canada, will be shared throughout this handout.

One teacher explained: "Sometimes the children work individually, privately. Sometimes they work with a buddy and sometimes they work with a group. I've come to believe that learning is a social activity and in order to learn we need to communicate, we need to share. So that's why in the classroom most things are done in a social way, with a buddy or in a small group of three or four. That way the children learn not only what they personally learned and explored, but they also learn from what the other people in their group learned and explored. Suddenly, they have learned four times as much as they would have learned if they were working by themselves in quiet."

One student from British Columbia commented: "Sometimes we work independently and that's not very fun because you can't help each other. I like working with other people and I'm learning that I can have choices."

COOPERATIVE LEARNING TECHNIQUES

THINK-PAIR-SHARE

Traditionally, as part of a lesson introduction, review, or summary, the teacher asks questions to the entire class. The same four or five hands of the highest achievers go up, but the total class involvement has been very limited. In "Think-Pair-Share" the same questions are asked, however, each student must "Think" of the answer silently for a few seconds. Next, students "Pair" with the person sitting beside them to discuss their answers. Finally, certain students "Share" their answer with the entire class. The total class is now involved and the anxiety of answering has also been reduced.

Notes From the Field

"In opening exercises there are lots of opportunities for children to turn to a buddy and talk to their buddy about their answer before they have to raise their hand and give the answer out loud. The purpose of that is to give the child the chance to sound out that idea without feeling that they may make a mistake. It gives the child who was lost at the beginning a chance to actively participate and not feel that they have nothing to say. When I finally ask individuals for an answer, and I usually ask only 4 or 5 children, I'll expect everyone to be accountable for that question because they've had a chance to share with another person. The emphasis is not on the answer, it is on the process that they used to come up with that answer and the chance they had to talk with one another gives them the chance to cooperate and communicate."

NUMBERED HEADS TOGETHER

Students are divided into small groups and then the children in each group are numbered 1,2,3, etc. The teacher asks a question and each group discusses the answer together. After a short discussion, the teacher calls out a number. If #1 is called out, then all of the #1 people in each group are responsible for giving the answer to the entire class. This technique increases the individual accountability of students involved, as anyone may be called on to represent their group to the class.

Notes From the Field

"To develop the idea of cooperative learning 'pairs' or 'groups,' I start by giving the children concrete things they must share --1 box of crayons or 1 set of paints for every pair or group. I also use colored stick-on dots to help children 'see' their group. After they are used to being in a group, I use the dots to help the children learn what 'number' they are in the group. Finally, I am able to eliminate the dots altogether."

BRAINSTORMING, WEBBING OR MAPPING

Two examples of ways to produce graphic outlines include brainstorming, and webbing or semantic mapping. Graphic outlines are visual representations that reflect key ideas and organizational patterns. They are most appropriate in describing things, such as an object with its attributes and features, a theme with supporting information, a concept with critical features and examples, or a problem with various solutions or consequences (Marzano et al., 1988; Jones et al., 1987). For younger children, pictures, either drawn by the students or selected from a picture file, may be substituted for words.

In brainstorming, small groups write the subject or topic in the center of a circle. Each student shares as many thoughts as possible relating to the topic, each thought is written on a line extending out from the circle's perimeter. Upon completion, all of the thoughts are discussed. A summary from each group is made which is shared with the whole class.

In semantic webbing or mapping, small groups write the subject or topic again in a circle, which becomes the center of the web. Students write their ideas in separate circles and connect related ideas with strands of the web. There may be many strands or few strands coming out from any one idea, depending on how the information relates or supports other strands. Each group can share their web with the whole class.

OTHER SOURCES

For more information about cooperative learning for young children, see *Children Learning in Groups: And Other Trends in Elementary and Early Childhood Education* (Hollifield et al., 1989) and *The Case for Mixed-Age Grouping in Early Childhood Education* (Katz et al., 1990). See also *Learning to Cooperate, Cooperating to Learn* (Slavin et al., 1985) and *Cooperation in the Classroom* (Johnson et al., 1991) for additional techniques and activities.

Notes From the Field

"Cooperative learning procedures can be very effective when used as a practice activity after specific skills have been taught, or as an activity which allows for exploration and discovery of a concept. With younger children, the teacher must be an active member of the group, first to explain and model procedural steps and also to help students recognize the main idea and summation of that idea."

REFERENCES

Hollifield, J., & Others. (1989). *Children learning in groups: And other trends in elementary and early childhood education.* Urbana, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.

Johnson, D. W., Johnson, R. T., & Holubec, E. J. (1991). *Cooperation in the classroom.* Edina, MN: Interaction Book Company.

Jones, B. F., Palinesar, A. S., Ogle, D. S., & Carr, E. G. (1987). *Strategic teaching and learning: Cognitive instruction in the content areas.* Alexandria, VA: Association for Supervision and Curriculum Development.

Katz, L. B., Evangelou, D., & Hartmen, J. A. (1990). *The case for mixed-age grouping in early childhood education.* Washington, DC: National Association for the Education of Young Children.

Lionni, L. (1973). *Swimmy.* New York: Pinwheel Books, Knopf/Pantheon.

Marzano, R. J., Brandt, R. S., Hughes, C. S., Jones, B. F., Presseisen, B. Z., Rankin, S. C., & Suhor, C. (1988). *Dimensions of thinking: A framework for curriculum and instruction.* Alexandria, VA: Association for Supervision and Curriculum Develoment.

Slavin, R., Sharan, S., Kagan, S., Lazarowitz, R., Webb, C., & Schmuck, R. (Eds.). (1985). *Learning to cooperate, cooperating to learn.* New York: Plenum.

! It's Story Mime Time !

A group activity

Objectives

- -- To help young children identify important parts of a story.
- -- To help young children sequence the main ideas of a story.
- -- To help young children work cooperatively, using both verbal and non-verbal communication skills.

Materials

Masters for creating mime cards are attached. In addition to the titles of some classic fairy tales, a blank is provided for you to write in a book or story title familiar to your students. Illustrations rather than titles are provided on two sheets. Photocopies or drawings illustrating stories familiar to the students might also be used.

Activity

The class is divided into groups of about 4 or 5 children. Each child gets to play a role, whether as a story character or as an inanimate object, such as a tree, chair, or a bridge, etc.

The group receives a card on which is written the title of a familiar children's book, story or fairy tale to act out (or you may show the children the cover of the book containing both the title and familiar pictures.) The children must all be familiar with the story.

As a group, the children talk together and decide what parts of the story to show, how the story is to be role-played, and who will play what role.

Each group silently presents their role play to the class using only actions, no words -- mime.

The audience must wait until the production is finished before guessing the title of the story or book.

For Younger Children

Younger children may need this activity broken down into additional stages. Below is a suggested sequence for developing story mime time.

1. *Familiarize* -- Begin reading the same story on several occasions to familiarize the whole group with the story.

2. *Model* -- The teacher can read sections of the story, pause and then model the mime actions for that section.

3. *Words and Actions* -- The teacher assigns character roles to the children. The teacher reads the story while the children act out their assigned roles using their own interpretations of previously modeled actions.

4. *Group Mime* -- The children work in groups (the teacher may need to assign roles). The children perform their own roles and accept the interactions of others, miming the given story in a specific sequence.

Related Activities

- *Isolated Miming Activity* -- In a group, the child chooses a picture card of a familiar subject theme (i.e., community helper; animal; segment of daily routine, such as going to bed; or isolated activity, such as walking upstairs). The teacher names the subject theme to the whole group. The child then mimes the actions, and the other children guess the subject. [This may be used as a transition activity.]

- *Action Songs* -- There are many records (i.e., Hap Palmer series) available with action songs/stories (i.e., "Sammy"), which give young children the opportunity to develop and relate actions for expressed stories. There are also many songs which include actions that are substituted for the words of the song (i.e., "Little Cabin in the Woods, " "Three Corner Hat"). There are songs/chants which involve many whole body actions (i.e., "Teddy Bear, Teddy Bear, Turn Around"). These all are precursors to mime.

Language Arts in an Integrated Curriculum

"It's Story Mime Time!" can be used in an integrated curriculum by expanding on elements of whichever story is used. For example, "Three Billy Goats Gruff" can be used to teach these subjects: mathematics, by counting goats; science, by classifying and labeling grazing animals; and social studies, by topographic identification of hills and valleys.

Notes From the Field

Early childhood teachers in Prince George's County, Maryland; Baltimore, MD; and rural Kentucky provided the following comments, suggestions, and extensions for this activity:

"I have read a book to my class and not told them the title or let them see the book cover. They must write a title and draw the book cover. The results are very good, and the entire class enjoys it."

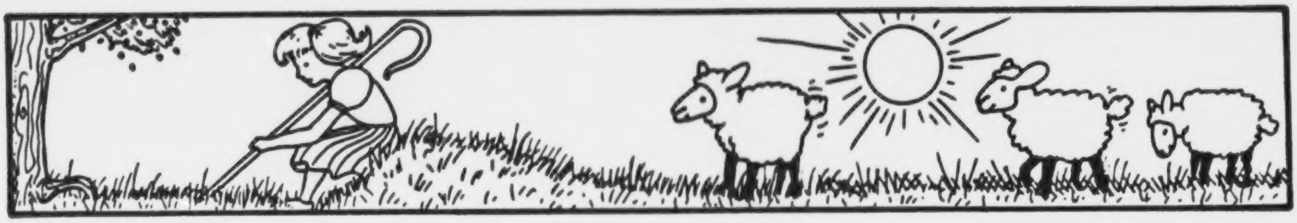
First develop the concept of sequencing. This can be done through "cut and paste sequencing, followed by a tape recorder sequence."

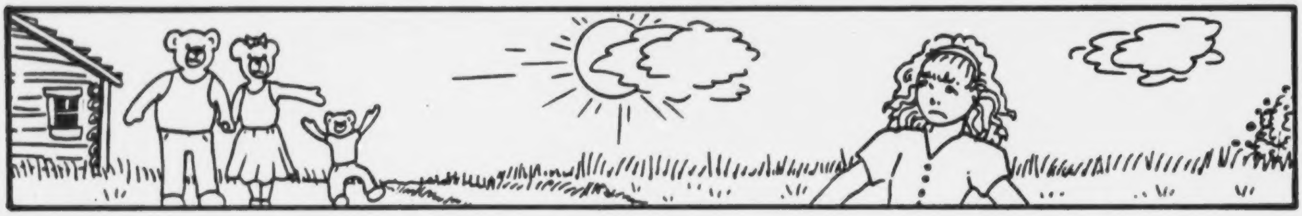
This activity "could possibly be used as a cooperative learning experience with an older grade."

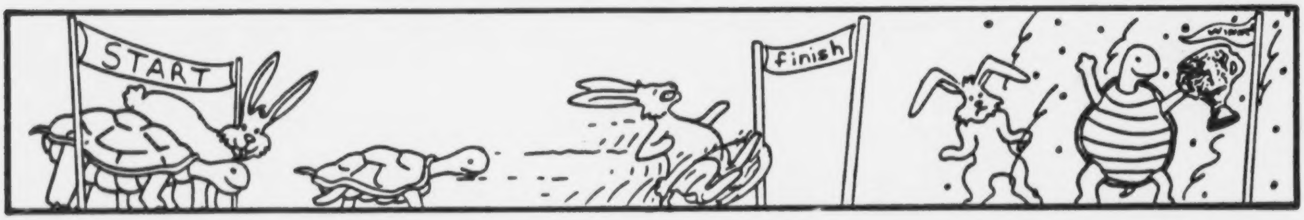
Story Mime Cards

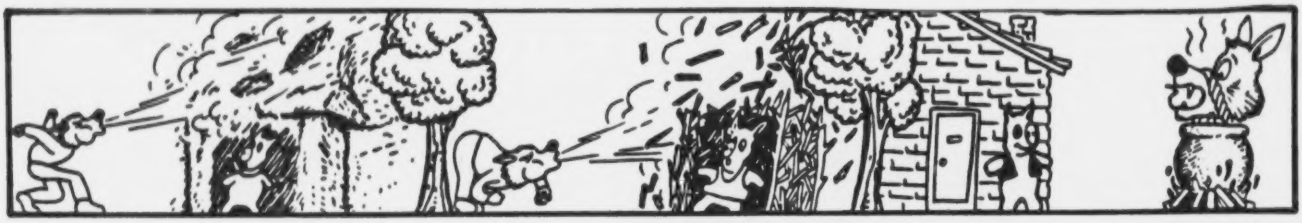
Cinderella	Three Little Pigs
The Billy Goats Gruff	Little Red Riding Hood
Snow White and the Seven Dwarfs	Goldilocks and the Three Bears
The Little Red Hen	

Story "Titles" for Non-Readers









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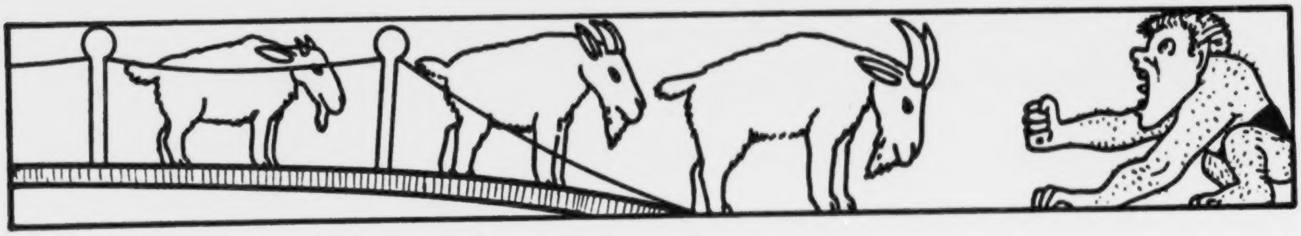
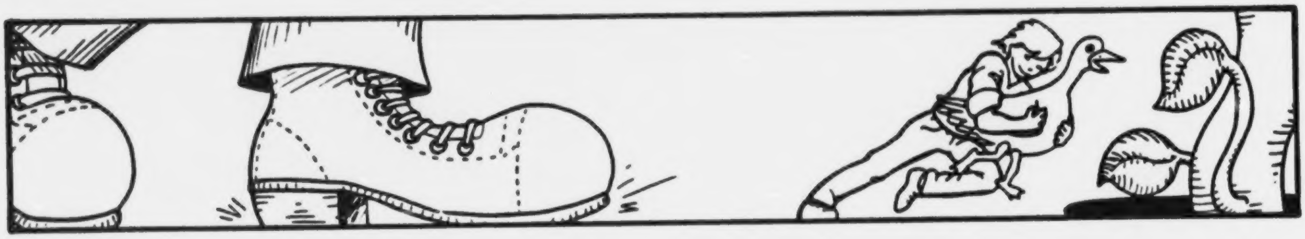
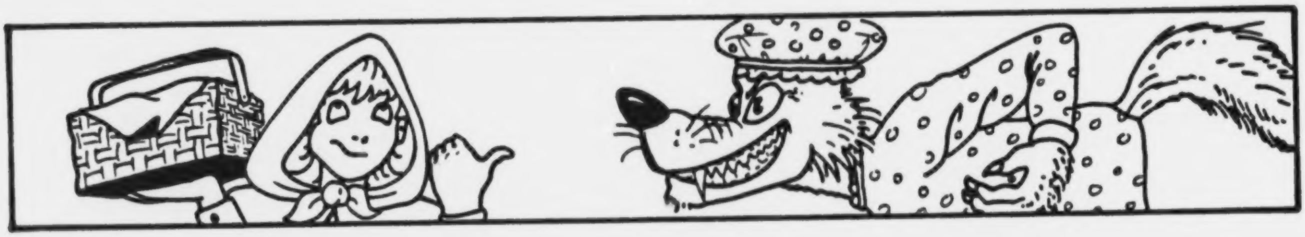
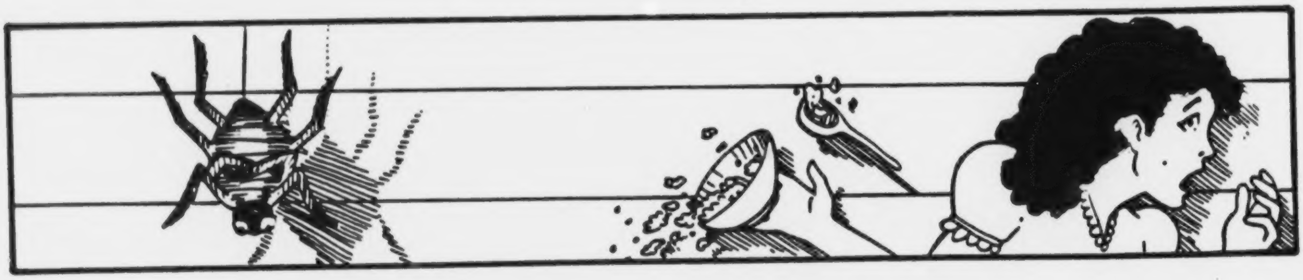
Story "Titles" for Non-Readers

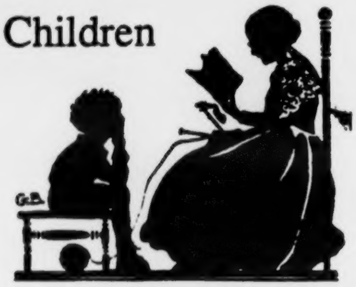








Ten Reasons to Read Aloud to Young Children



1) Reading aloud to young children will encourage them to become readers.

The first National Education Goal states "By the year 2000, all children in America will start school ready to learn." In the text accompanying the goals, parents are encouraged to actively help their children learn, "particularly by reading to them on a daily basis." Beginning readers need to see positive role models engaging in reading. When reading is shared with children by reading aloud to them, a whole world of new experiences is opened up to them. Another option is to read a book that the child, or the child and the adult together, have made. These might be on themes such as pets or people in the family, or a recent special event in which the child participated. [Examples of materials to read include: board books, pop-up books, child-made books, wordless books, predictable books, ABC and counting books, picture books, folktales, fairy tales, novels, poetry, and more, and more....]

2) Reading aloud fosters children's ability to listen-- an essential requirement for learning, both in and out of school.

"Listening is closely related to reading, and both involve high-level thinking. Developing a sense of story, learning about words, discovering patterns of language, and enjoying the sounds of language all depend upon learning to listen" (Taylor and Strickland, 1986, p. 53). Listening to a story may be done while sitting quietly or it may also be done while engaging in another quiet activity, such as coloring or drawing. Many young children enjoy hearing the same story over and over. The repetition of a story suits the child's need for familiar routines and allows the child to form questions and gain further understanding from the story. [Read children *The Snowy Day* by Ezra Jack Keats.}

3) Reading aloud conveys the purpose of printed matter.

Children are very much aware of the print they see in the world around them and are aware that it conveys a message. Reading materials can vary in length, in subject matter, and in complexity-- young readers need not be limited to only books. [You can read aloud such things as road signs, truck signs, package labels, billboards, magazine covers, comics, newspaper headlines, and grocery store advertisements to young children.]

4) Reading aloud engages children in language.

Books can draw children's attention to sound and word patterns that display the richness and variety of different language patterns. Young children love to hear the rhyming or repeated phrases common to predictable books and the word combinations found in storybooks that may not be a part of their everyday speech. Reading aloud does not come naturally. Adults may want to practice reading a story aloud to themselves, before doing so in front of children. This practice can help them feel more at ease and help them read with expression. [Read young children the books *Drummer Hoff* adapted by Barbara Emberly and *Goodnight Moon* by Margaret Wise Brown.]

5) Reading aloud allows children to do active thinking.

Read at a pace that allows listeners to build mental images of the characters and scenes. At critical moments in the story, stop and inquire: "What would you do if you were in this situation?" "What do you think will happen next?" Allowing children time to think and ask questions of their own encourages more frequent responses and higher level thinking skills. Thought-provoking questions bring out the very purpose of literature, which is to bring meaning to our lives (Trelease, 1989). Asking questions during a story expands children's conversation skills and builds in predicting as part of the reading routine. Also, as children begin to think and talk about stories, they become more aware of the elements that make up a story, i.e., plot, setting, characters, theme, tone, etc. [Read and discuss *Make Way for Ducklings* by Robert McCloskey.]

6) Illustrations in children's books are often of the highest quality, giving children a lifelong appreciation for good art.

Pictures in books allow young children to read the story-- with or without the words. Visual literacy comes before print literacy. Books allow the child to study the picture for as long as desired, unlike television or movies where pictures flash by quickly. Beautiful and stirring pictures can move readers of all ages, making picture books appealing to any age. A special award, the Caldecott medal, is given annually to the best illustrated children's book. Search these books out as a special treat. You can also bring the illustrator and the author to life by sharing the information about them from the dust cover or inside the book. [Read *Miss Rumphius* by Barbara Cooney to a child, and enjoy the illustrations together.]

7) Reading aloud enables the child's imagination to soar.

"Until children learn to read themselves, they will think you are magic" (Children's Librarian's Society). However, even after children learn to read, it is still important to read aloud to them for several years. The listening level of most children is well above their reading level until about the eighth grade. Therefore, it is important to read children stories that have greater vocabulary, more complicated structures, and more intricate plots than those they can read for themselves. It is also important to make sure that there is time to read the whole story or enough of it to kindle the child's interest. Having to stop after one or two pages is especially frustrating to young children. [Read *James and the Giant Peach* by Roald Dahl.]

8) Children's books today are so good that they are FUN, even for adults.

"Shared laughter makes everyone feel better" (Trelease, 1989, p. 55). Reading books together can be a constant source of pleasure and information. Let the children choose which books to listen to and read. The adult can also share his or her selections and opinions about books (i.e., "This story is awful" or "I like this book"). [Read and laugh together over the activities of *Amelia Bedelia* by Peggy Parish.]

9) Books are one way of passing along important values to children.

It has been said that the core of the nursery tale is ethics. Trelease suggests that fairy tales have a very positive message for children because their theme is inevitably "take your courage in hand and go out to meet the world head on" (1989, p. 55). Books provide opportunities for sharing common values and views of the world. They also provide opportunities for exposure to and discussion of sensitive issues such as birth or death. [Read *The Tenth Good Thing About Barney* by Judith Viorst with children, and let them share any personal experiences they may have had with death.]

10) When you read aloud to children (and sometimes hold them on your lap), you give them attention, and they know you love them.

Reading to children builds an emotional bridge between the children and the adults. According to Taylor and Strickland (1986, p. 111), "Hug me, love me, and grow with me" is the message that adults and children find hidden between the pages of the books that they share. Even the youngest child can understand this message. [Share the book *Little Bear* by Else Minarik with someone you love.]

[These ten reasons for reading aloud to young children are a modification and expansion of an earlier list published by the Michigan Montessori Society (Children's Librarian's Society, 1989). Additional tips from Denny Taylor and Dorothy Strickland's *Family Storybook Reading* (1986) and Jim Trelease's *The New Read-Aloud Handbook* (1989) were included.]

Other Sources

In "The Preschool Years" section of the National Goals for Education (July 1990, p. 9), there is a strong endorsement for parents to read to their children on a daily basis. This echoes an earlier recommendation in *Becoming a Nation of Readers: The Report of the Commission on Reading*; the Commission report said that "The single most important activity for building the knowledge required for eventual success in reading is **reading aloud to children** [emphasis added] " (Anderson, Hiebert, Scott, & Wilkinson, 1985, p. 23). The Commission report stressed the importance of including children as active participants in reading activities through talk that extends concepts and vocabulary, through statements, and through thought-provoking questions, i.e., "Why do you think there's a slip of paper under the windshield wiper?" Denny Taylor and Dorothy Strickland's *Family Storybook Reading* (1986) and Jim Trelease's *The New Read-Aloud Handbook* (1989) include very helpful suggestions about how to establish family reading routines and how to extend discussions with children about books. In addition to the kind of tips cited throughout this handout, both books include extensive annotated bibliographies. *Family Storybook Reading* also includes detailed descriptions of several family's storybook reading experiences.

As an additional resource, a toddler book list has been included. The list was adapted from "Helping Today's Toddlers Become Tomorrow's Readers: A Pilot Parent Participation Project Offered Through a Pittsburgh Health Agency" by Joan Brest Friedberg (January 1989).

References

Anderson, R. C., Hiebert, E. H., Scott, J. A., & Wilkinson, I. A. G. (1985). *Becoming a nation of readers.* Washington, DC: National Institute of Education.

Children's Librarian's Society. (1989). 10 reasons for reading to your children. In *Michigan Montessori Society Newsletter* (15709 Haggerty Road, Plymouth, MI).

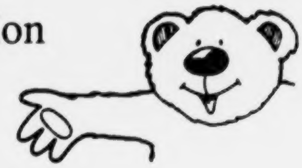
Friedberg, J. (January 1989). Helping today's toddlers become tomorrow's readers: A pilot parent participation project offered through a Pittsburgh health agency. *Young Children,* 44 (2), 13-16.

National goals for education. (July 1990). Washington, DC: U.S. Department of Education.

Taylor, D., & Strickland, D. S. (1986). *Family storybook reading.* Portsmouth, NH: Heinemann Educational Books, Inc.

Trelease, J. (1989). *The new read-aloud handbook.* New York: Penguin Books.

Suggestions for a Toddler Book Collection



Mother Goose collection: There are many to choose from.

Nursery tales: The old favorites like *The Little Red Hen*; again, there are many editions.

Board books: Choose ones with attractive pictures, uncluttered layout, and, if possible, children from a variety of ethnic backgrounds. Some of the titles listed below are in the board format; many are available in both paper and hardcover editions.

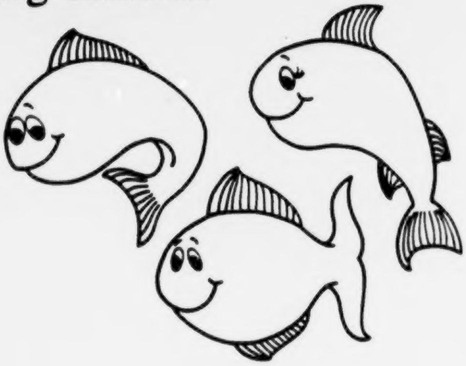
Ahlberg, J. & Ahlberg, A. (1979). *Each Peach Pear Plum*. New York: Viking.
Bang, M. (1983). *Ten, Nine, Eight*. New York: Greenwillow.
Barton, B. (1982). *Airport*. New York: Crowell.
Barton, B. (1987). *Machines at Work*. New York: Crowell.
Brown, M. W. (1947). *Goodnight, Moon*. New York: Harper & Row.
Brown, M. W. (1972). *The Runaway Bunny*. San Diego: Harcourt Brace Jovanovich.
Burningham, J. (1971). *Mr. Gumpy's Outing*. New York: Henry Holt.
Carle, E. (1969). *The Very Hungry Caterpillar*. New York: Philomel.
Carlstrom, N. W. (1986). *Jesse Bear, What Will You Wear?* New York: Macmillan.
Cleaver, E. (1985). *ABC*. New York: Macmillan.
Crews, D. (1978). *Freight Train*. New York: Greenwillow.
Crews, D. (1980). *Trucks*. New York: Greenwillow.
Duke, K. (1986). *Clean-Up Day*. New York: Dutton. [And other Guinea Pig board books]
Flack, M. (1971). *Ask Mr. Bear*. New York: Macmillan.
Gag, W. (1928). *Millions of Cats*. New York: Coward-McCann.
Ginsburg, M. (1980). *Good Morning, Chick*. New York: Greenwillow.
Hill, E. (1980). *Where's Spot?* New York: Putnam.
Hutchins, P. (1972). *Goodnight, Owl!* New York: Macmillan.
Hutchins, P. (1971). *Rosie's Walk*. New York: Macmillan.
Hughes, S. (1982). *Alfie Gets in First*. New York: Lothrop, Lee & Shepard.
Hughes, S. (1985). *Bathwater's Hot*. New York: Lothrop, Lee & Shepard.
Hughes, S. (1985). *Noisy*. New York: Lothrop, Lee & Shepard.
Jonas, A. (1982). *When You Were a Baby*. New York: Greenwillow.
Jonas, A. (1986). *Now We Can Go*. New York: Greenwillow.
Keats, E. J. (1967). *Peter's Chair*. New York: Harper & Row.
Keats, E. J. (1962). *The Snowy Day*. New York: Viking.
Keller, H. (1984). *Geraldine's Blanket*. New York: Greenwillow.
Krauss, R. (1970). *Whose Mouse Are You?* New York: Scholastic.
Leaf, M. (1936). *The Story of Ferdinand*. New York: Viking.
Lindgren, B. (1982). *Sam's Car*. New York: Morrow.
Martin, B., Jr. (1983). *Brown Bear, Brown Bear, What Do You See?* New York: Henry Holt.

Suggestions for a Toddler Book Collection (cont.)

McNaught, H., illus. (1973). *500 Words To Grow On*. New York: Random House.
Omerod, J. (1982). *Moonlight*. New York: Viking.
Omerod, J. (1981). *Sunshine*. New York: Lothrop, Lee & Shepard.
Omerod, J. (1985). *Dad's Back*. New York: Lothrop, Lee & Shepard.
Omerod, J. (1985). *Messy Baby*. New York: Lothrop, Lee & Shepard. [And other board books]
Oxenbury, H. (1982). *Mother's Helper*. New York: Dial. [And other board books]
Piper, W. (1954). *The Little Engine That Could*. New York: Platt.
Rice, E. (1981). *Benny Bakes a Cake*. New York: Greenwillow.
Rice, E. (1977). *Sam Who Never Forgets*. New York: Greenwillow.
Seuss, Dr. (1960). *Are You My Mother?* New York: Random House.
Slobodkina, E. (1940). *Caps for Sale*. New York: Scholastic.
Scarry, R. (1976). *Early Words*. New York: Random House.
Spier, P. (1971). *Gobble Growl Grunt*. New York: Doubleday.
Watanabe, S. (1979). *How Do I Put It On?* New York: Philomel.
Wells, R. (1973). *Noisy Nora*. New York: Dial.
Zion, G. (1956). *Harry the Dirty Dog*. New York: Harper & Row.
Zolotow, C. (1962). *Mr. Rabbit and the Lovely Present*. New York: Harper & Row.

[Adapted from: Friedberg, J. (January 1989). Helping today's toddlers become tomorrow's readers: A pilot parent participation project offered through a Pittsburgh health agency. *Young Children*, 44 (2), 13-16.]

A Listening Activity For Young Children



Task

The children are to listen to the story and at each pause draw a new picture based on the information provided.

Objectives

- To help children listen for and attend to details
- To activate visual images in young children
- To let children create pictures based on their own background experiences & ideas
- To help children check their first ideas against new information & make revisions
- To demonstrate to children the need to make corrections when reading, listening, and thinking
- To develop problem-solving behaviors by having children ask themselves if their ideas make sense

Materials

Each child needs drawing implements and either one large sheet of paper which is (or can be) divided into eight squares or a set of the pages at the end of the handout which can be made into a "little book."

LEADER INSTRUCTIONS FOR THE "LOU GREEN" STORY

Direct the children to fold paper into 8 sections (e.g., fold paper in half, fold once again to make fourths, and a third time to make eighths) or give everyone a set of the pages at the end of the handout which can be made into a little book to take home or share with others at the end of the activity. To assemble the book, put the sheet with page 4 in the upper lefthand corner on top with the sheet with page 2 right under it, and the sheet that is blank (with the title on the reverse side) on the bottom of the stack. Put a hole about two inches in from the top and bottom margins on the broken line and use yarn to tie the pages together. Fold on the broken line to complete the book.

The children are to listen to the story and at each pause draw a picture which is based on the information provided in that part of the story. Follow-up discussion should focus on what kinds of changes children made in their drawings and why. The activity may also be used to introduce or reinforce the elements of story (character, setting, etc.) and/or the conventions of print (if a "little book" is made).

Related Activities

- *Predicting the Story*-- Read part of a short story and have the students draw a picture of the ending as they predict it will be. To make this an individual rather than group activity, the story could be put on a tape recorder. A child could then listen, turn off the recorder to draw the picture (and, therefore, not be limited to the time allotted in a group situation), and continue listening to the next story section when ready.

- *Conducting "Research"*-- New words or ideas presented by a story can be researched by the class using the dictionary, encyclopedia, and reference materials (with adult help as needed). Children can get engrossed in this kind of research when it is presented as a problem-solving tool that gives them control in finding out about the unknown.

Notes From the Field

Early childhood teachers in Prince George's County, Maryland; Baltimore, MD; and rural Kentucky provided the following comments, suggestions, and extensions for this activity:

"This is an excellent activity for all primary children. I would break up the last part, add a pause, and then have them conclude with the last box. Giving instructions for two boxes is a little too much for some first graders."

"I'd like to try this (with kindergarteners) in a shortened, easier version-- maybe four pictures or a simpler story using a more familiar experience. Great for predicting!"

"I read a sentence about a person and have the students draw a simple face picture showing the emotion that the person felt. Choices and picture examples include: happy, sad, mad, etc."

One preliminary experience would be to use a "chart story" where a story is broken into segments and each segment is represented with a picture.

"I often try to integrate science experiences into the language arts program since 'time' is such a big factor in our day."

Language Arts in an Integrated Curriculum

According to both the National Association for the Education of Young Children (1989) and the National Association of Elementary School Principals (1990), young children need a curriculum that is integrated rather than taught as discrete subjects. Whenever possible, language arts concepts and skills should be taught with mathematics, science, social studies, art, ... and vice versa. "Lou Green's Story" provides an opportunity for scientific exploration of topics such as the schooling behavior of fish, the predator-prey relationship, ...

Leo Lionni's *Swimmy* is a storybook that could be used in conjunction with "Lou Green's Story." Swimmy is a small black fish whose fellows are swallowed by a tuna. He is scared, sad, and lonely until he becomes part of a school of small red fish. Together they provide security for each other by forming the outline of a large fish with Swimmy as its eye. Carol and John Butzow (1989) discuss a number of ways to use this Lionni story in *Science Through Children's Literature: An Integrated Approach*. The activities include making a chart comparing fish to humans, examining fish scales with a slide projector or microscope, counting the rings on the scale to determine the age of the fish, identifying sea creatures in the story that are not fish and finding their unique characteristics, ... *Swimmy* also lends itself to a discussion of social studies topics such as group cooperation, individuality, ... For more information about integrating subject area instruction, see "Materials for Integrating Science and Social Studies with Language Arts" (Spiegel, October 1990). See also "Teaching Math Through Literature" and "Science Instruction for Young Children" in *Workshop Leader's Guide: Early Childhood Education. Volume II: Instructional Activities and Handouts* (Godt, Jensen, & Ehlmann, 1991).

References

Butzow, C. M., & Butzow, J. W. (1989). *Science through children's literature: An integrated approach*. Englewood, CO: Teacher Ideas Press, A Division of Libraries Unlimited, Inc.

Godt, P. T., Jensen, D. L., & Ehlmann, M. T. (February 1991). Science activities for young children. In P. T. Godt, D. L. Jensen, & M. T. Ehlmann, *Workshop leader's guide: Early childhood education. Volume II: Instructional activities & handouts*. Indianapolis, IN: National Chapter 1 Curriculum & Instruction Resource Center, PRC, Inc.

Godt, P. T., Jensen, D. L., & Ehlmann, M. T. (February 1991). Teaching math through literature. In P. T. Godt, D. L. Jensen, & M. T. Ehlmann, *Workshop leader's guide: Early childhood education. Volume II: Instructional activities & handouts*. Indianapolis, IN: National Chapter 1 Curriculum & Instruction Resource Center, PRC, Inc.

Lionni, L. (1963). *Swimmy*. New York: Random House.

National Association for the Education of Young Children. (1989). *Appropriate education in the primary grades: A position statement*. Washington, DC: NAEYC, pp. 22-23.

National Association of Elementary School Principals. (1990). *Early childhood education and the elementary school principal: Standards for quality programs for young children*. Alexandria, VA: NAESP, p. 4.

Spiegel, D. L. (October 1990). Materials for integrating science and social studies with the language arts. *The Reading Teacher*, 44 (2), 162-65.

Lou Green's Story

You have never met me, so I'm going to tell you all about me. I am not very big, but I'm very active. I have a father and a mother. I have many sisters, brothers, cousins, aunts, and uncles. Are you wondering what I look like? Use your imagination. **Draw a picture of me in box one.**

Pause

After you have heard more of the story, you may change your mind about the way I look. I have a home. It is a most intriguing home. It is very cool and comfortable. My large family and I have plenty of - how do YOU say it? Oh yes, elbow room. We have plenty of elbow room. Do you know what my home looks like? Keep thinking. Someday you, your mother, father, sisters, brothers, cousins, aunts and uncles may come to visit me. There will be plenty of room for all of you. Why not bring the neighbors? Bring all your friends, too. I have heard that someday you and your friends may decide to live in my home. We will not be crowded. But be sure to bring your own oxygen. Now, do you know where I live? Be careful. Think about what you have heard. **In box two, draw a picture of my home.**

Pause

Did you make your best guess? I like to play games. Tag is one of my favorite games. My favorite sport is swimming. It seems to me I've been swimming all my life. **In box three, draw a picture of the way you think I look.**

Pause

What is your favorite game? What is your favorite sport? I am sometimes in a school with other girls and boys. My school is quite different from yours. Most of the time we just swim and play tag. Would you like to be in a school like that? **In box four, draw a picture of my school.**

Pause

Do you know me? Keep thinking. One of my friends just came by. My friend may appear strange-looking to you. Guess how many arms my friend has? My friend has five arms and is red. **In box five, draw a picture of my friend.**

Pause

I'll tell you the name of my friend. My friend is a starfish named Ruby. My starfish friend lives at the bottom of the sea where I live, too. Have you again changed your mind about the way I look? **Draw my picture in box six.**

Pause

Did you draw a picture of a fish? That's right. My name is Lou Green, and I'm a fish. **In box seven, draw a picture of me swimming with my school of fish.** You may draw my starfish friend, too. **In the very last box, draw a picture of you coming to visit my home in the sea.**

Lou
Green's
Story

MUSIC, ART, & MOVEMENT

Young children are spontaneously drawn to music, art, and movement. Such activities encourage the young child's developing abilities in the physical realm, including both gross motor: locomotion skills, balance and coordination, relations of self in space; and fine motor: differentiation in and increase of muscle control over specific movements (winking, snapping).

Such activities serve many purposes. First of all, they help to nurture the roots of creativity and individuality. This is how children come to know themselves and to uniquely express themselves in the world. An important goal of these activities is to have fun. Enjoyment produces positive feelings and creates an environment conducive to learning.

Music, art, and movement activities become familiar threads that weave through the young child's day. They become a way for the child to learn concepts incidentally from other subject areas via auditory (music), visual (art), or kinesthetic (movement) modalitites. And they become opportunities to integrate various curriculum areas. They can also serve as transition activities to calm children down after a boisterous activity, or to prepare children for a new activity.

Music

Songs for young children range from familiar "classics" to new songs that can be adapted to include children's names or composed to reinforce a specific idea (McCall, 1965; McCormick). Songs can come from music books, records, audiotapes, movies, and television. Popular recording artists today include Raffi, Sharon Lois & Brown, Rosenshontz, Joe Scruggs, Barry Louis Polisar, Thomas Moore, and others as well as television celebrities such as Sesame Street and Disney characters, and Mister Rogers. Music can also introduce musical instruments and the concepts of rhythm and melody.

Art

Creative art work can be elicited by planning creative uses of the spaces available, including the outdoors, and providing interesting materials with which to work. Demonstrate some simple procedures for the children, motivate them to think of other creative ways to use the medium presented, and then be accepting of the objects of their creative efforts. In the process of creating, Barnett (1981) gives three factors that all work together: ideas, actions, and results. Activities include construction activities of separating (i.e., cutting, tearing), or joining (i.e., gluing, weaving, folding); modeling and sculpturing (i.e., clay, papier mache); and, communication activities (i.e., drawing, coloring, painting).

Movement

Movement activities (i.e., musical games, action songs, finger-plays) are the beginnings of drama and dance. Movement activities encourage self-expression, enhance self-image, and stimulate the learning process (Pica, 1986). Good sources of movement activities come from recordings by Ella Jenkins and Hap Palmer. Friedrich Froebel, the Father of the Kindergarten, said, "What the child imitates he (she) begins to understand. Let him represent the flying of birds and he enters partially into the life of the birds...In one word let him reflect in his play the varied aspects of life and his thoughts will begin to grapple with their significance" (Glazer, 1973).

Many children today are riddled with tension, anxiety, loneliness, depression, and anger which can impair concentration and learning (Belknap, 1986). Activities in music, art, and movement can help children to relax. When children have a release outlet, they learn to relax and to let go of tension. This can increase both their ability to process information and their sense of caring and respect for one another. The results lead to higher academic scores and decreased discipline problems as well as happier, well-adjusted children.

Songs in an Integrated Curriculum

Familiar children's songs can be used to introduce or reinforce a variety of thoughts, feelings, and actions appropriate to a young child's growth. A list of some suggested songs follows with related ideas for integration into the curriculum.

- "BINGO" - sequence, letters, rhythm, memory, clapping
- "Frosty the Snowman" - seasons, melting, friends
- "Green Grass Grew All Around" - sequence, repetition, nature, tree, ground, birds
- "Head, Shoulders, Knees, and Toes" - labeling body parts, movement
- "Hokey Pokey" - left/right reference, body parts, movement
- "I Have a Friend That You All Know" - friendship, cooperation, naming
- "I Know an Old Lady Who Swallowed a Fly" - predictable sequence, repeating order, what animals eat

Songs in an Integrated Curriculum (Cont.)

- "If You're Happy and You Know It" - feelings, following directions, counting actions (clap, etc.)
- "It's a Small World" - cooperation, land and water areas on globe, people of other continents
- "I've Been Working on the Railroad" - trains, occupations, musical instruments
- "John Jacob Jingleheimer Schmidt" - first-middle-last names, self-concept, loud/soft
- "Johnny Works with One Hammer" - children's names, counting, movement and balance
- "Little White Duck" - colors, animal sounds, and habitats
- "Pick a Bale of Cotton" - plants, share crops, products from natural resources
- "Put Your Finger in the Air" - rhyming, locating body parts
- "Row, Row, Row Your Boat" - water activities and safety, movement
- "Red, Red Robin" - colors, birds, seasons, daily routines
- "She'll Be Coming Round the Mountain" - sequence, repeating order, movement
- "Ten Little Monkeys Jumping on the Bed" - counting, consequences, accidents
- "The Bear Went Over the Mountain" - animals, curiosity, five senses
- "The More We Get Together" - cooperation, friendship, feelings
- "The Mulberry Bush" - days of the week, daily/weekly routines
- "This Land Is Your Land" - names of states, geographical features, citizenship
- "You Sing a Song" - cooperation, weather
- "Where Is Thumbkin" - finger names, left/right reference, actions

References

Barnett, R. R., (1981). *Let out the sunshine*. Dubuque, IA: William C. Brown Publishing Co.

Belknap, M., (1986). *Taming your dragons*. East Aurora, NY: D.O.K. Publishers

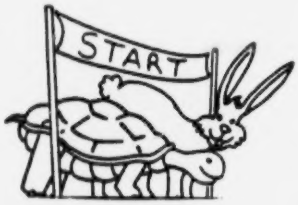
Glazer, T., (1973). *Eye winker, Tom tinker, chin chopper*. Garden City, NY: Doubleday

Pica, R., (1986). *Poetry In motion*. Bryon, CA: Front Row Experience

McCall, A., (1965). *This is music*. Boston: Allyn and Bacon, Inc.

McCormick, M., Osborn, J. *Language through songs*. Urbana, IL: University of Illinois Press

Teaching Math Through Literature



Mathematical Concepts Can Be Taught to Children During Reading and Language Arts Activities

Several teachers and researchers have recently published information detailing effective ways to integrate math and reading activities for young children. Mathematical thinking skills fostered in this manner build on children's developmental needs and interests and involve them in active, creative ways as recommended by both the National Association for the Education of Young Children (NAEYC) and the National Council of Teachers of Mathematics (NCTM). To achieve these standards in the area of mathematics, young children need to experience mathematics as being accessible, natural, thought provoking and interesting. Virtually any story can be associated with mathematics by drawing children's attention to the mathematical concepts inherent in our everyday world. Some vocabulary relating to mathematical concepts is listed below.

time & sequence: never, always, sometimes, frequently, eons, usually, then, first, second, third, last, short time, ...

number: some, none, few, several, many, part, nothing, whole, most, least, with, without, much, pair, two, couple, big, little, ...

weight: heavy, light, fat, thin, skinny, tiny, huge, big, small, empty, full, ...

speed & velocity: fast, slow, hurry, dawdle, quickly, slowly, raced, plodded, flew, ...

distance: near, far, inch, foot, yard, mile, close, far, long way, short distance, ...

ACTING OUT A STORY

Children can be given an opportunity to verbalize and act out stories from books in order to deepen and extend their understanding of the mathematical ideas involved. Some examples of stories that can be used to teach mathematical concepts include:

Freeman, Don. (1968). *Corduroy*. New York: Viking Press.
Label, Arnold. (1970). *Frog and Toad Are Friends*. New York: Harper & Row.
Sharmat, Marjorie. (1977). *I'm Terrific*. New York: Scholastic.
Slobodkina, Esther. (1984). *Caps for Sale*. New York: Scholastic.

In addition to being acted out, stories like these can also provide the opportunity for other integrated math activities. Three suggested math activities developed by Tischler (1988) for children to do after reading *Frog and Toad Are Friends* or *Corduroy* are described on the next page.

OPEN-ENDED BUTTON EXPLORATION

Buttons are lost in both *Frog and Toad are Friends* and *Corduroy*. Buttons, collected in any assortment, make a good classroom resource. Bought by the pound or brought from home, the buttons can be sorted in endless ways. As children sort the buttons, they should be asked to verbalize their classification strategies, i.e., they are sorting buttons by color, shape, size, etc. The idea of "sets" can be introduced at this point. As they play the game, the children will also develop an awareness of, and language for, the various attributes of buttons.

"GUESS THE RULE" CARDS

This is another activity with buttons. The child chooses a cardboard card with three or four buttons glued to the top that follow the same pattern or "rule." From an assortment of buttons, the child places other buttons on the card that match the pattern. Possible patterns include: all white or mixed colors, 2 holes or 4 holes, metal or plastic, large or small, and so on. The children should explain the pattern, i.e., what the buttons have in common. The children can also create additional cards.

COPYING GAME

After reading the book *Caps for Sale* (Slobodkina, 1984), a pattern copying game can be played. Materials needed for the game are: one "peddler" board and several "tree" boards. The boards can be made from a felt board or from elongated cardboard strips with a picture of either the peddler or the tree glued at the bottom; the pictures can be taken from the book or players can draw them. Different-colored pieces of paper, felt, material with velcro strips attached, or other media such as dried lima beans spray-painted a variety of colors can be used to represent the colored hats. The teacher is the peddler initially and arranges the "hats" on the peddler board while naming the pattern (e.g., "red hat, red hat, blue hat"). The children copy the pattern onto their tree boards. Children can take turns being the peddler and calling out their pattern for the others to copy.

A variation of this game is for the peddler to call out the color pattern verbally, but not show the illustration until the end. Then the children can compare their boards to the peddler board and check to see if they have the same pattern.

STORIES CREATED BY THE CLASS

Besides using published books, children can create their own stories that include mathematical concepts. For this activity, choose a topic for a story, then have the children take turn(s) adding a sentence to make up the story. Record the story on audio tape. After replaying the whole story for the class, the teacher can conduct a discussion, drawing attention to story aspects related to number. Excerpts from such a story-based discussion follow (Cangelosi, 1988):

STORIES CREATED BY THE CLASS (cont.)

Magen: The name of the story is "The Duck and the Lake."
Amanda: The duck swam in the lake.
Dustin: The duck caught some fish.
Mindy: The duck ate the fish and came out of the lake.
Allison: The duck went back into the lake and had a party.
Anthony: The duck had fun at the party 'cause he ate some jelly beans.
Teacher: How many times during the story did the duck go into the lake? ....
Casey: To catch some fish.
Teacher: Was that the only time the duck went into the lake?
Casey: He went to a party too.
Teacher: So, how many times did he go into the lake?
Joey: Two times.
Teacher: How many fish did Dustin say the duck caught?
Twyla: He didn't say.
Teacher: Let's play back the tape and listen to what Dustin said about the number of fish the duck caught.

From the tape recorder, Dustin's voice repeats, "The duck caught some fish."

Teacher: How many fish?
Twyla: See! He didn't say; he just said "some."
Teacher: What did you mean by "some," Dustin?
Dustin: You know, just some.
Teacher: I want everyone to close her or his eyes and imagine seeing Dustin's duck out on the lake catching some fish. See it in your mind. Now, silently to yourself, count how many fish you see the duck catching in your imagination.

After a pause, the teacher continues, "All of you silently show me with your fingers how many fish you saw Dustin's duck catch . . . . I see David with four, Amy with six, Chris with three . . . All of you had between two and ten. Is that about how many you meant when you said 'some,' Dustin?"

Dustin: Yea, I thought about six.

ADDITIONAL SOURCES OF WAYS TO INTEGRATE CURRICULUM

On the following page is a guide for specific items to include in learning centers to promote numeracy and literacy; the lists come from "Play, Print, and Purpose: Enriching Play Environments for Literacy Development" in the November 1990 issue of *The Reading Teacher* (Neuman & Roskos). For additional ways to integrate math and other subject area instruction, see "Concrete Math" in *Workshop Leader's Guide: Early Childhood Education. Volume II: Instructional Activities and Handouts* (Godt, Jensen, & Ehlmann, 1991). See also "Mathematics + Social Studies = Learning Connections" in the December 1988 issue of *Arithmetic Teacher* (Spence & Martin).

Items for Preschool Learning Centers That Promote Numeracy and Literacy

The following suggestions for enriching preschool learning centers came from Susan B. Neuman and Kathy Roskos' article, "Play, Print, and Purpose: Enriching Play Environments for Literacy Development," which was printed in the November 1990 issue (v. 44, no. 3, pp. 214-21) of *The Reading Teacher*. The article also includes floor plans designed for enriched centers.

Post Office Center

Envelopes of various sizes
Assorted forms
Stationery
Pens, pencils, markers
Stickers, stars, stamps, stamp pads
Homemade mailbox
A tote bag for mail
Computer/address labels
Large plastic clips
Calendars of various sizes
Small drawer trays
Posters/signs about mailing

Library Center

Library book return cards
Books to read to dolls/animals
Stamps for marking books
A wide variety of children's books
Bookmarks
Pens, pencils, markers
Paper of assorted sizes
A sign-in/sign out sheet
Stickers
ABC index cards
Telephone & telephone books
Calendars of various types
Posters of children's books
File folders

Kitchen Center

Cookbook
Blank recipe cards
Labelled recipe boxes
Small plaques/decorative magnets
Personal stationery
Food coupons
Grocery store ads/fliers
Play money
Empty grocery containers
Small message board
Calendars of various types
Notepads of assorted sizes
Pens, pencils, markers
Large plastic clips
Telephone books
A real telephone
Emergency number decals

Office Center

Calendars of various types
Appointment book
Message pads
Signs (e.g., open/closed)
Books, pamphlets, magazines
File folders
Racks for filing papers
In/out trays
Index cards
Business cards
Assorted forms
Play money
Ledger sheets
Typewriter or computer keyboard
Clipboards
Post-its/address labels
Note cards
Large plastic clips
Pens, pencils, markers
Trays for holding items

REFERENCES

Cangelosi, James (December 1988). Lesson with first graders. *Arithmetic Teacher,* 36 (6), 6-9.

Curriculum and evaluation standards for school mathematics. (March 1989). Reston, VA: The National Council of Teachers of Mathematics, Inc., pp. 17-19.

Freeman, D. (1968). *Corduroy.* New York: Viking Press.

Godt., P. T., Jensen, D. J., & Ehlmann, M. T. (February 1991). Concrete math. In P. T. Godt, D. L. Jensen, & M. T. Ehlmann, *Workshop leader's guide: Early childhood education. Volume II: Instructional activities & handouts.* Indianapolis, IN: National Chapter 1 Curriculum & Instruction Resource Center, PRC, Inc.

Label, A. (1970). *Frog and toad are friends.* New York: Harper & Row.

National Association for the Education of Young Children. (1989). *Appropriate education in the primary grades: A position statement.* Washington, DC: NAEYC, pp. 22-23.

Neuman, S. B., & Roskos, K. (November 1990). Play, print, and purpose: Enriching play environments for literacy development. *The Reading Teacher,* 44 (3), 214-21.

Sharmat, M. (1977). *I'm terrific.* New York: Scholastic.

Slobodkina, E. (1984). *Caps for sale.* New York: Scholastic.

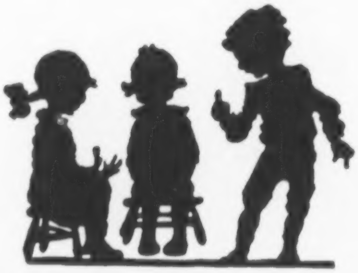
Spence, C., & Martin, C. S. (December 1988). Mathematics + social studies = learning connections. *Arithmetic Teacher,* 36 (4), 2-5.

Tischler, R. W. (February 1988). Mathematics from children's literature. *Arithmetic Teacher,* 35 (6), 42-47.

Concrete Math Activities

Young children can be helped to understand and solve math problems by making the facts of the problems more concrete. They should be encouraged to act out situations using real people in the classroom. The following math examples can help to illustrate this point. These concrete math activities can be used with large or small groups as formal lessons or as informal lessons in shorter time intervals, such as transition times between activities.

Sample Concrete Math Activities



Acting Out Stories

Identify 5 students to act out this story to find the answer:

5 students were in line to hang up their pictures.
The teacher told the last 3 students in line to go back to their seats.
How many students were still standing in line?

After lots of experience acting out real situations, students can next be encouraged to use objects to represent the people or items used when solving problems. These can be very closely tied to the real object at first, such as photos of the people and items, or cut out shapes of the objects. Gradually, representations of the object can become more abstract. Eventually a neutral object (i.e., a poker chip or other counter) can be introduced, that is not similar to the real object, to "stand in" for it or represent it in a situation. However, children need to have a well-developed concept of number before moving on to the more abstract problems.

Making a Cracker Tower

Line up ingredients under signs numbered sequentially 1 through 5. Under #1 place crackers, under #2 place peanut butter, under #3 place banana slices, under #4 place jelly, and under #5 place raisins.

Invite the children to create their own snack, starting with number 1 and moving to #5. The children can use all 5 ingredients or fewer ingredients, if they wish.

Afterwards ask each child to tell how many different things were piled onto their cracker tower, and if they wish, in what order they were piled.

This activity can help the children learn one-to-one correspondence, familiarize them with the written numerals 1-5, and help them follow directions.

[Adapted from: Stone, Janet. (1990). *Hands-On Math: Manipulative Math for Young Children Ages 3-6.* Glenview, IL: Good Year Books, Scott, Foresman and Company.]

Using Counters

Tell students to pretend their desks are playgrounds and the counters are basketballs. Have students solve this problem using their counters:

> *5 students were playing with basketballs on the playground.*
> *4 students took their basketballs home.*
> *How many basketballs were left on the playground?*

Students should be encouraged to physically move the counters around to "act out" the story on their desks. Later, they can draw figures on the blackboard or on their papers to represent what is happening in the problem.

Drawing Pictures

Read the story problem below. Have students draw 5 circles to represent Melissa's oranges. Read the story again. Have students draw circles to show the other children's oranges and then use their pictures to solve the problem. NOTE: Children need to be able to count and have an understanding of the one-to-one correspondence between objects and numbers to be able to answer this question.

> *Melissa picked 5 oranges.*
> *Donnie picked 2 oranges.*
> *Neal picked 4 oranges.*
> *How many oranges did they pick altogether?*

Some children may tire of drawing separate pictures of oranges or basketballs or other items mentioned in the problems. This can present an ideal opportunity to introduce tally marks as another way to represent the number of items. Felt or paper cut-outs can also be substituted if children find drawing to be too tedious.

Using Paper and Pencil

Read the problem to the children and ask them to solve it.

> *11 children were on the softball team.*
> *9 children were on the field. The rest stayed in the dugout.*
> *How many children stayed in the dugout?*

NOTE: Abstract mathematical symbols should only be presented after children have developed the corresponding underlying language structure.

Math in an Integrated Curriculum

In 1989, the National Council of Teacher of Mathematics published curriculum and evaluation standards which endorsed a K-4 math curriculum which actively involves children, makes extensive use of physical materials, and emphasizes application of mathematics in "real-world situations and activities in other curricular areas." Whenever possible, math concepts and skills should be taught with reading, science, social studies, art, music, ... and vice versa. There are a number of children's songs which integrate math and music. Songs that highlight counting include: "Ten Little Indians," "This Old Man," "Five Little Freckled Frogs," and "Over in the Meadow." Other songs can be used to focus on other math concepts, i.e., "Inchworm" can be used in a measuring lesson. Students can act out the songs in the same manner as described in the first sample activity on page one.

Concrete mathematics and science instruction can be integrated in a number of ways. Cooking involves mathematical activities such as measuring the ingredients, noting the proportions while mixing the batter, timing the baking, ... and science activities such as observing the effects of heat on ingredients when melting, boiling, or baking; observing the changes when ingredients are mixed (watching bread rise after yeast is added); .... Growing plants in the classroom is another activity that can be the basis for integration of concrete math and science instruction. Rapidly growing bulbs (i.e., amaryllis) are especially good for charting activities. The plant can be measured daily. After collecting data over several days, a graph can be made showing the rate of growth. Children can observe the stages of growth. They can also observe the effects of light, water, and nutrients on the bulbs....

Math and reading instruction can also be integrated in concrete ways. Flannel board versions of *Goldilocks and the Three Bears, Millions of Cats* (Gag, 1977), and other stories can be used to teach story elements. Plot can be illustrated by putting symbols for story elements up on the board in the order they appear in the story. The flannel story pieces can also be the basis for counting, grouping, classifying, ranking,.... Stories such as Eric Carle's *The Very Hungry Caterpillar* can be the basis for teaching the days of the week, how to count to five, and how a caterpillar becomes a butterfly by using the flannel board, acting out the stories, or using other concrete activities. Activity centers that incorporate both numeracy and literacy props can also be the basis for concrete activities . In grocery store play centers, children can develop shopping lists, and they can work with objects in bulk (per pound) or in containers (ounces or liters)....

Sources containing additional ideas and materials for teaching math in an integrated curriculum are included in "Language Activities That Promote Awareness of Mathematics" (Cangelosi, 1988) and "Mathematics from Children's Literature" (Tischler, 1988). These articles appeared in the February and December issues of *Arithmetic Teacher*. See also "A Listening Activity for Young Children," "Learning Through Child's Play," "Science Instruction for Young Children," and "Teaching Math Through Literature" in *Workshop Leader's Guide: Early Childhood Education. Volume II: Instructional Activities and Handouts* (Godt, Jensen, & Ehlmann, 1991).

Conclusion

We need to be especially sure that the activities we present to young children are developmentally appropriate. As Lilian Katz pointed out in 1988, the fact that we can motivate young children to participate in rote counting of numbers long before they really understand what they mean by reinforcing them with extrinsic rewards like gold stars, stickers or tokens, does not mean that we should do so. "Just because young children can do something does not mean they should do it." (Katz, 1988, p. 11). There is a big difference between actively involving children in activities that will help them to understand the underlying concept of "number" and involving them in an empty parroting of mathematical rules or formulas without any understanding of the personal meaning these concepts have in their lives. To be developmentally appropriate, mathematics for young children needs to be concrete, involve active participation, and be presented in as integrated a fashion as possible.

References

Carle, E. (1986). *The very hungry caterpillar*. New York: G. P. Putnam.

Cangelosi, J. S. (December 1988). Language activities that promote awareness of mathematics. *Arithmetic Teacher,* 36 (4), 6-9.

Curriculum and evaluation standards for school mathematics. (March 1989). Reston, VA: The National Council of Teachers of Mathematics, Inc., pp. 17-19.

Gag, W. (1977). *Millions of cats*. New York: McCann.

Godt, P. T., Jensen, D. L., & Ehlmann, M. T. (February 1991). A listening activity for young children. In P. T. Godt, D. L. Jensen, & M. T. Ehlmann, *Workshop leader's guide: Early childhood education. Volume II: Instructional activities & handouts*. Indianapolis, IN: National Chapter 1 Curriculum & Instruction Resource Center, PRC, Inc.

Godt, P. T., Jensen, D. L., & Ehlmann, M. T. (February 1991). Learning through child's play. In P. T. Godt, D. L. Jensen, & M. T. Ehlmann, *Workshop leader's guide: Early childhood education. Volume II: Instructional activities & handouts*. Indianapolis, IN: National Chapter 1 Curriculum & Instruction Resource Center, PRC, Inc.

Godt, P. T., Jensen, D. L., & Ehlmann, M. T. (February 1991). Science instruction for young children. In P. T. Godt, D. L. Jensen, & M. T. Ehlmann, *Workshop leader's guide: Early childhood education. Volume II: Instructional activities & handouts*. Indianapolis, IN: National Chapter 1 Curriculum & Instruction Resource Center, PRC, Inc.

References (cont.)

Godt, P. T., Jensen, D. L., & Ehlmann, M. T. (February 1991). Teaching math through literature. In P. T. Godt, D. L. Jensen, & M. T. Ehlmann, *Workshop leader's guide: Early childhood education. Volume II: Instructional activities & handouts*. Indianapolis, IN: National Chapter 1 Curriculum & Instruction Resource Center, PRC, Inc.

Katz, L. F. (1988). *Early childhood education: What research tells us* (PDK Fastback #280). Bloomington, IN: Phi Delta Kappa Educational Foundation.

Stone, J. I. (1990). *Hands-on math: Manipulative math for young children ages 3-6*. Glenview, IL: Good Year Books, Scott, Foresman and Company.

Tischler, R. W. (February 1988). Mathematics from children's literature. *Arithmetic Teacher,* 35 (6), 42-47.

Notes From the Field

Early childhood teachers in Prince George's County, Maryland; Washington, D.C.; Baltimore, MD; and several rural Kentucky communities provided the following comments, suggestions, and extensions for this activity:

> "This is the exact method that I use in teaching math. I use students to teach the concepts of tall-short, big-little, number of items in sets, addition, and subtraction."
>
> "I feel comfortable using this activity. Kindergarteners need the constant exposure to real situations."

The teachers also said they had success with the following related activities:

- Bar Graphs-- Have students line up in the shape of a human bar graph. Then, give the students squares of colors, so that they resemble a colored bar graph.
- Working with Sets-- Group students into sets of 3, 4, 5, or 6. Count each set. Compare sets to see which has more, has less, and has the same number of children. See how many children are in each set. Write the numeral for the set quantity.

Emergent Literacy-- What Is It? What Does It Mean for Classroom Instruction?

Emergent literacy refers to young children's development in the areas of reading and writing. In October of 1988, Dorothy S. Strickland and Lesley Mandel Morrow of Rutgers University began a monthly feature called "Emerging Readers & Writers" in *The Reading Teacher*. The two-page articles are written by Strickland and Morrow or guest authors. They are intended for teachers and parents, and they explore the concept of emergent literacy, discuss what children know about reading and writing and how they come to know it, and applications of the research to classroom practices and school policy. The articles through 1990 are listed below, and a sample of the articles is included in the following pages.

The "Emerging Readers & Writers" Series To Date

Feitelson, D., & Iraqi, J. [Guest authors]. (November 1990). Storybook reading: A bridge to literary language. *The Reading Teacher,* 44 (3), 264-65.

McGee, L. M., & Jones, C. [Guest authors]. (October 1990). Learning to use print in the environment: A collaboration. *The Reading Teacher,* 44 (2), 170-72.

Strickland, D. S., & Morrow, L. M. (October 1988). New perspectives on young children learning to read and write. *The Reading Teacher,* 42 (1), 70-71.

Strickland, D. S., & Morrow, L. M. (November 1988). Creating a print rich environment. *The Reading Teacher,* 42 (2), 156-57.

Strickland, D. S., & Morrow, L. M. (December 1988). Reading, writing, and oral language. *The Reading Teacher,* 42 (3), 240-41.

Strickland, D. S., & Morrow, L. M. (January 1989). Interactive experiences with storybookreading. *The Reading Teacher,* 42 (4), 322-23.

Strickland, D. S., & Morrow, L. M. (February 1989). Young children's early writing development. *The Reading Teacher,* 42 (6), 426-427.

Strickland, D. S., & Morrow, L. M. (March 1989). Family literacy and young children. *The Reading Teacher,* 42 (7), 530-31.

Strickland, D. S., & Morrow, L. M. (April 1989). Assessment and early literacy. *The Reading Teacher,* 42 (8), 634-35.

Strickland, D. S., & Morrow, L. M. (May 1989). Creating curriculum: An emergent literacy perspective. *The Reading Teacher,* 42 (9), 722-23.

Strickland, D. S., & Morrow, L. M. (October 1989). Developing skills: An emergent literacy perspective. *The Reading Teacher,* 43 (1), 82-83.

Emergent Literacy (cont.)

Strickland, D. S., & Morrow, L. M. (November 1989). Environments rich in print promote literacy behavior during play. *The Reading Teacher*, 43 (2), 178-79.

Strickland, D. S., & Morrow, L. M. (December 1989). Oral language development: Children as storytellers. *The Reading Teacher*, 43 (3), 260-61.

Strickland, D. S., & Morrow, L. M. (January 1990). Sharing big books. *The Reading Teacher*, 43 (4), 342-43.

Strickland, D. S., & Morrow, L. M. (February 1990). The daily journal: Using language experience strategies in an emergent literacy curriculum. *The Reading Teacher*, 43 (6), 422-23.

Strickland, D. S., & Morrow, L. M. (March 1990). Family literacy: Sharing big books. *The Reading Teacher*, 43 (7), 518-19.

Strickland, D. S., & Morrow, L. M. (April 1990). Integrating the emergent literacy curriculum with themes. *The Reading Teacher*, 43 (8), 604-5.

Strickland, D. S., & Morrow, L. M. (May 1990). Linking theory and practice: Resources for an emergent literacy curriculum. *The Reading Teacher*, 43 (9), 690-91.

Taylor, D., & Walls, L. [Guest authors]. (September 1990). Educating parents about their children's early literacy development. *The Reading Teacher*, 44 (1), 72-74.

Vukelich, C., & Valentine, K. [Guest authors]. (December 1990). A child plays: Two teachers learn. *The Reading Teacher*, 44 (4), 342-44.

Related Books

Taylor, D., & Strickland, D. S. (1986). *Family storybook reading*. Portsmouth, NH: Heinemann Educational Books, Inc. [Intended for practitioners and parents with information about finding books, making family storybooks, and establishing family reading routines. Includes lots of anecdotes.]

Strickland, D. S., & Morrow, L. M. (Eds.). (1989). *Emerging literacy: Young children learn to read and write*. Newark, DE: International Reading Association. [Also with practical applications, but including relevant research and theory. Topics include an overview, oral language development, family storybook reading, children's literature, writing, the place of skill instruction in preschool and kindergarten, alternative testing of young children's reading, and classroom design.]

In addition, in the "Professional Resources" section of the January 1990 issue of *The Reading Teacher* (vol. 43, no. 4, pp. 330-31), Sharon and David Moore from Arizona State annotated recent books on emergent literacy. A copy of that article is attached.

PROFESSIONAL RESOURCES

Emergent literacy: Children, parents, and teachers together

Sharon Arthur Moore, Arizona State University-West
David W. Moore, Arizona State University-West

Emergent literacy, which refers to young children's reading and writing development, has received much professional and research attention the past few years. Educators and researchers have produced an impressive body of knowledge about early written language behaviors and ways to help young children control them. Several books about emergent literacy have followed this activity. Indeed, we revised this column twice to include new resources that arrived. These books provide excellent theoretical principles and practical suggestions for promoting young children's literacy.

Home: Where Reading and Writing Begin. Mary W. Hill. 1989. Heinemann Educational Books (70 Court Street, Portsmouth, NH 03801, USA). 101 pp. Paperback. US$8.95.

Literacy Begins at Birth. Marjorie V. Fields. 1989. Fisher Books (P.O. Box 38040, Tucson, AZ 85740-8040, USA). 275 pp. Paperback. US$10.95.

The books by Hill and Fields are written specifically for parents. The language generally is jargon free, the examples are abundant, and the concepts are important and relevant for parental use. Both books invite reader engagement; for instance, children's names rather than awkward terms such as *the child* or *the youngster* are used. Notwithstanding this considerate writing, both books are for parents who have somewhat advanced literacy skills; they do not target disadvantaged readers. Limited literacy mothers and fathers might benefit best from these books by having someone available to clarify their contents.

We asked Shelli Panicucci, our neighbor, an accountant, and mother of three young children, to read these books and give us a non-reading-educator-parent's perspective. She reported that the books clarified and expanded her understanding of language processes and language development activities. She told us that she enjoyed reading them, and she mentioned being grateful for the confirmation that much of what she already was doing naturally was sanctioned by educators.

Shelli wished that *Literacy Begins at Birth* had continually reminded the reader of the ages of the children in the examples, as she found looking back at the introduction for this information to be intrusive. A positive feature was that the book was filled with photographs of children and parents engaged in language activities. Additionally, the print was large, making it easy for Shelli to cuddle her baby while reading the text.

Home: Where Reading and Writing Begin has moderate visual appeal, but it presents many examples to illustrate the developmental nature of children's writing. The style is lively, and the content easy to read. Children's literature titles fill the pages so that parents can be directed to materials other than those they remember from their own childhood reading or find on grocery store shelves.

Both books introduce parents to essential topics such as oral language development, concept development, beginning writing experiences, and the value of reading aloud to children. Those who work with parents should find the information in either text informative and accessible. Parents should come away from these books knowing that they, as parents, affect their children's language tremendously; moreover they should come away knowing how to do so in a positive manner.

Literacy Development in the Early Years: Helping Children Read and Write. Lesley Mandel Morrow. 1989. Prentice Hall (Route 9W, Englewood Cliffs, NJ 07632, USA). 244 pp. Paperback. US$23.00.

Literacy Learning in the Early Years: Through Children's Eyes. Linda Gibson. 1989. Teachers College Press (1234 Amsterdam Ave., New York, NY 10027, USA). 192 pp. Paperback. US$16.95.

Professional Resources is a review column for scholarly publications and other materials on literacy education that are appropriate for professional development. Materials reviewed in Professional Resources are in no way advocated or endorsed by *RT* or the International Reading Association. Opinions expressed are those of the columnists or guest reviewers. Send materials to be considered for review to **Sharon Arthur Moore, Education & Human Services, P.O. Box 37100, Arizona State University-West, Phoenix, AZ 86069, USA.**

The emergent literacy books by Morrow and Gibson are primarily for an audience of educational practitioners. These two books cover aspects of children's language and thinking in understandable and well illustrated ways. Many examples of children's language are provided. Both honor the role of the home and school in the development of literacy and provide valuable insights into how parents, caregivers, and teachers foster language learning.

Literacy Development in the Early Years: Helping Children Read and Write provides rich descriptions, research findings, and informed opinion about early literacy. This book is divided into nine chapters and six appendices with titles such as "Language as a Vehicle for Developing Literacy," "Developing Positive Attitudes toward Reading through the Use of Children's Literature," and "The Home as a Vehicle for Literacy." It describes instructional strategies and approaches that are grounded in the science, theory, and art of teaching. Emergent literacy information derived from research is blended with information derived from the craft knowledge of the profession to produce a substantive resource. This book is well documented. It is a treasure for those who want current solid information about children's language learning and ways that schools and homes can support it.

Learning Literacy in the Early Years: Through Children's Eyes contains four sections defined by children's ages, "Birth Through Two," "The Three-Year-Old," "Four-And Five-Year-Olds," and "The Primary Years." This organizational plan provides a distinctive chronological view of early literacy. Chapters within the sections contain titles such as "Learning to Speak," "Classroom Life: The Social Context of Language Learning," "Teaching Reading in Kindergarten," and "Building a Community of Readers." The chapters are packed with language learning stories as well as oral and written language samples. These examples are pertinent for describing the issues, concerns, and tasks associated with fluent language use. This book admirably maintains its focus of suggesting "ways for bringing greater congruence between literacy teaching and literacy learning" (p. xiv).

Emerging Literacy: Helping Young Children Learn to Read and Write. Dorothy S. Strickland and Lesley Mandel Morrow, Editors. 1989. International Reading Association (800 Barksdale Road, PO Box 8139, Newark, DE 19714-8139, USA). 161 pp. Paperback. US$10.00 (members), US$15.00 (nonmembers).

Risk Makers, Risk Takers, Risk Breakers: Reducing the Risks for Young Literacy Learners. JoBeth Allen and Jana M. Mason, Editors. 1989. Heinemann Educational Books (70 Court Street, Portsmouth, NH 03801, USA). 351 pp. Paperback. US$18.50.

Two edited collections of information about emergent literacy also deserve attention. Strickland and Morrow's book of readings is distinctive in part because it includes the text of the potentially influential statement, "Literacy Development and Prefirst Grade: A Joint Statement of Concerns about Present Practices in Prefirst Grade Reading Instruction and Recommendations for Improvement." This position paper is endorsed by the International Reading Association, Association for Childhood Education International, National Council of Teachers of English, National Association of Education of Young Children, and other professional groups. It ought to form the basis for curriculum revision in private and public preschools and kindergarten classrooms.

Other aspects of this collection also are noteworthy. Photographs, oral and written language samples, and descriptions of children create a well-integrated text. Many recognized authorities in the field contributed to this volume. Maintaining a sense of continuity among 12 chapters written by different authors is not easy, but the editors of this text have done so. It is highly readable and informative with important chapters such as "Family Storybook Reading: Implications for Children, Families, and Curriculum" (Strickland & Taylor), "The Place of Specific Skills in Preschool and Kindergarten" (Schickedanz), "Assessment of Young Children's Reading: Documentation as an Alternative to Testing" (Chittenden & Courtney), and "A Model for Change: Framework for an Emergent Literacy Curriculum" (Strickland). Other chapters are just as powerful and necessary for insight into curriculum issues and what to do about them.

Risk Makers, Risk Takers, Risk Breakers: Reducing the Risks for Young Literacy Learners is another edited collection. The editors, Allen and Mason, address both policies and practices in early language learning. This book is unique in that the original research of various professionals is described here. But have no fear! The naturalistic research that is largely used is reported very clearly. It informs without being overwhelming. Those who are lulled to sleep by traditional research report language and statistical summary tables will stay awake with these reports. The research shared here is relevant and clearly stated.

The title of this book refers to factors that put children at risk while learning language (risk makers), to individuals who go beyond standard practice to reduce the possibility of failure (risk takers), and to ways that society must address sociological and educational factors that put children at risk (risk breakers). This is accomplished in four sections including 15 chapters. The four sections, "Learning with Children," "Learning with Teachers," "Learning with Families," and "Literacy Learning for All Children," include chapters with titles such as "Anna Evaluates Herself," "Non-Risk Kindergarten Literacy Environments for At-Risk Children," "Supporting Lower SES Mothers' Attempts to Provide Scaffolding for Book Reading," and "Emergent Literacy and the Transformation of Schools, Families, and Communities: A Policy Agenda." The table of contents reads like a "Who's Who" in emergent literacy. The authors are highly respected and knowledgeable members of this field. We predict that this will become an important book, one that will be consulted and cited frequently.

EMERGING READERS & WRITERS

Assessment and early literacy

Dorothy S. Strickland
Lesley Mandel Morrow

Miriam Cohen's picture storybook *First Grade Takes a Test* describes what happens when a group of young children encounter their first standardized test. In one segment a youngster named George looks at the first question that reads:

"Rabbits eat: lettuce _____, dog food _____, sandwiches _____."

George knows that rabbits need to eat carrots or their teeth will get too long. Since he can't find the correct answer, he draws in a carrot so the test people would know.

The policy statement of the International Reading Association on *Literacy Development and Pre-First Grade Reading* (IRA, 1985) suggests that evaluative procedures be developmentally and culturally appropriate and that their selection be based on the objectives of an instructional program. Standardized tests are the most commonly used measures in American schools today.

There are, however, numerous problems associated with them. (1) They are often used as the most important form of evaluation for determining whether children are promoted or retained. (2) They are given just once during a school year. (3) They focus on a narrow set of specific skills. (4) The test items allow for only one acceptable response. (5) The tests frequently do not reflect the skills and knowledge that are developing in young children, which we have learned about in the research on emerging literacy. (6) Tests are not sensitive to the development of personal characteristics of young children. Moreover, many youngsters cannot understand the directions for the test, some do not handle pencil and paper tasks well, and the whole group setting for testing can increase anxiety.

Teachers are dramatically affected by standardized tests. Their ability as teachers is often evaluated by how well their children perform, so they will often teach to the test, spending a great deal of class time in preparation. Since the test contents do not reflect much of the new literature which describes strategies for developing early literacy, as teachers teach for the test they are using inappropriate instruction. Yet if they don't teach for the test, their children may not score well. This presents a serious dilemma.

Assessment vs. testing

To deal with the problem, we need to understand the differences between testing and assessment and determine appropriate goals for evaluating children. A standardized measure is used to obtain evaluation information of a very specific type. The test evaluates children against prescribed expectations.

Assessment, on the other hand, is much broader and has several objectives. It is designed to match instruction and therefore evaluate children as to what they have been learning. The teacher looks at what has been learned, what needs to be learned, and how children are learning.

The information gained is used to design instruction for individuals. Assessment enhances teachers' competence as evaluators of student progress, since they are playing an active role in evaluation. Teachers assess using several methods such as observation, writing anecdotal records, and collecting performance samples. Data are collected frequently and with multiple measures. Teachers discuss children's progress with other teachers and support personnel to broaden their understanding. The measures used must go beyond artificial grade lines so that children are able to demonstrate all their abilities.

This form of informal assessment needs to be accepted by teachers, parents, and administrators as being just as important as standardized measures and possibly replace them (see "Assessing Young Children's Literacy Development" by William Teale, Elfrieda Hiebert, and Edward Chittenden in the April 87 RT, pp. 772-77).

What to assess and how

What should we assess? Assessment in early literacy should reflect the skills and knowledge that are developing in young children. We need to go beyond the testing for visual and auditory discrimination that is typical of current reading readiness tests.

Researchers have learned that as literacy emerges, children need to (1) learn the functions of reading and writing, (2) develop a sense of story structure and how to comprehend story, (3) make attempts at reading and writing in their own way prior to the emergence of conventional reading and writing.

Although this list is not complete, it touches on some of the knowledges that are developing in children that need to be evaluated.

How should we assess these behaviors? Daily occurrences in the classroom provide the best setting, since assessment and instruction can be

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linked. Teachers use varied assessment strategies as they observe behavior, keep anecdotal or continuous records about children, collect daily performance samples that provide tangible evidence of progress, interview children and discuss literacy activities, fill out checklists, and tape activities that can demonstrate growth.

Assessment settings are thus varied in type and context, are used continuously during the school year, and focus on a variety of behaviors. This sort of assessment ensures that at least some measures will be appropriate for children with varied cultural backgrounds and ability levels.

Behavior samples

Here are examples of situations in which teachers used different assessment contexts. They reveal how much can be learned about children's progress, how children learn, and how teachers become expert in learning about the children.

During a story reading with a small group in which interactive dialogue was encouraged, one teacher learned a great deal about Katie's understanding of story. In the book *Caps for Sale* monkeys take caps from a peddler while he sleeps. He tries to get the caps back by asking the monkeys for them, but each time they just imitate him and don't return the caps.

Teacher: "By this time the peddler was really very angry. He stamped both his feet and shouted 'You monkeys, you! You must give me back my caps!'"

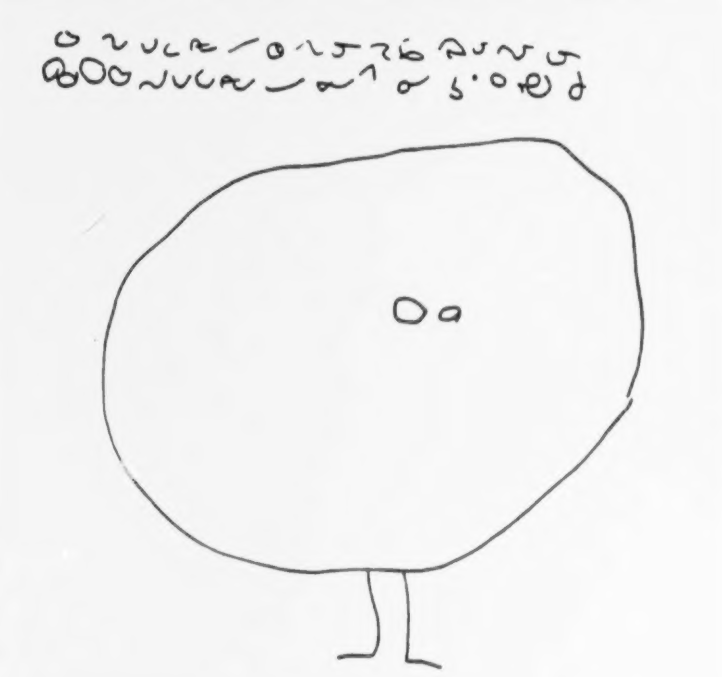
Katie: "I know what will happen. The monkeys will just stamp their feet like the peddler and say 'tsz, tsz, tsz.'"

Teacher: "Katie, that's exactly right. I'll read it to you: 'But the monkeys only stamped both their feet back at him and said, tsz, tsz, tsz.'"

Katie offered an interpretive response during this story reading. She predicted what would come next, based on her understanding of what had already happened. The teacher recorded this as part of her running records so she could plan appropriate instruction for Katie's level of understanding.

Four year old Juan read his story to the teacher. His paper had an illustration and the story was written in letterlike forms. From this performance sample, his teacher learned that Juan knew the difference between pictures and print and the functions of each even though his writing was not yet conventional (see Figure).

Juan's story and illustration



From Literacy Development in the Early Years: Helping Children Read and Write by Lesley Mandel Morrow, p. 152. Reprinted by permission of Prentice-Hall, Englewood Cliffs, NJ.

An interview with Ivory, who was in a classroom where emergent reading strategies were incorporated, revealed that she understood a great deal about the knowledge necessary to read. She was asked how she was learning to read.

Ivory: "Well, first the teacher reads lots of books to us and she always says the author and the illustrator and the title. She makes sure you can see the pictures and she points to the words with the big books so you know the words she is reading. The teacher lets you try reading books that you know. I do it like she does. I look at the pictures, sometimes I can read a word."

These informal assessments demonstrate that through observation, recording anecdotes, reviewing performance samples, and interviewing, teachers can learn a great deal about children's emergent reading abilities.

This series is prepared by **Dorothy Strickland** of Teachers College Columbia University and **Lesley Mandel Morrow** of Rutgers University. Send comments to **Dorothy Strickland, Teachers College Box 135, Columbia University, New York NY 10027, USA.**

Integrating the emergent literacy curriculum with themes

Dorothy S. Strickland, Rutgers University
Lesley Mandel Morrow, Rutgers University

The concept of an integrated school day, with its interdisciplinary approach to teaching, emerged from the works of Pestalozzi, Froebel, Piaget, and Dewey, all of whom suggested that learning is based on the interests of the child and that instruction, therefore, should be active, manipulative, and sense-oriented. They believed that children need time to explore, experiment, and play with interesting materials in order to learn. Dewey also stressed the importance of real-life experiences in learning. As children pursue their interests and experiences, their skill development is integrated functionally (Dewey, 1966). Ideally, according to these theories, instead of studying separate lessons on particular skills, children study themes of interest to them and learn skills in the process.

Integration of content and emergent literacy skills includes concern for children's interests and their individual differences. It provides socially interactive settings and behaviors for modeling and emulation. It focuses on real-life experiences and is both purposeful and functional. Characteristics of the integrated school day, while drawing upon ideas described by earlier theorists, now include more recent research findings on how literacy is acquired (Heath, 1980; Mason, 1980). Many literacy activities can be integrated into the school day.

Art, for example, allows children to explore and experiment with finger paints, watercolors, sponge painting, felt-tip markers, paste, scissors, yarn, pipe cleaners, and modeling dough. If children are encouraged to discuss such materials as they use them, language development flourishes. Young children immersed in finger painting, for instance, use such words as *squiggle*, *mushy*, and *gushy*. Watercolors stimulate such comments as "Oh, it's drippy," "Look how the colors all run together," and "My picture looks like a rainbow of colors across the sky." The teacher can make word lists from the language generated during art activities to encourage the children to share and talk about what they are doing.

Music provides ample means for literacy development. Children increase vocabulary by finding new words in songs. Songs emphasize syllabic patterns in words, which can be brought to the attention of the children. Songs can be written on charts and sung, as the teacher points to the individual words.

Science and social studies provide great opportunities for literacy development. Their contents typically generate enthusiasm, meaning, and purpose. A unit on the farm can generate word lists of farm animals, crops, and jobs on a farm. These words can lead to oral language development through discussions about farm work, different types of farms, and farm animals. A trip to a farm, a visit by a farmer, or pictures of a farm can stimulate discussion, reading, and writing as can the teacher's reading from children's literature about farms. Experiments in science and food preparation offer opportunities for more discussion; more interesting word lists; and the reading and writing of recipes, directions, and results.

When literacy skills are developed in an integrated fashion, through themed units and literacy activities serving a realistic function, then children see purposes and reasons for becoming literate. Conversely, if we teach literacy skills that do not reflect real-life experiences and that lack interesting content, children perceive no usefulness in the skills.

Using themes or units of study especially supports the integration of emergent literacy skills and content areas in the curriculum. Consider the use of *animals* as a theme, for example. When children arrive at school, they can participate in any of a number of quiet activities planned around the theme. Books about animals are featured in the library corner. The science and social studies table holds collections of pictures and figures of four different types of animals: farm, zoo, pet, and woodland. There are live animals in the classroom: fish in an aquarium, gerbils, hamsters, guinea pigs, newts, hermit crabs, or rabbits.

During the morning get-together, the teacher points out a "Morning Message," which says, "We will be going on a trip to a farm." The teacher reads it, asking the children to join in unison. To generate discussion and build anticipation she asks, "What do we need to think about before going to the farm?" She generates further discussion about the unit topic, asking the children to name all the farm animals they can think of and listing them as they are named.

Music and literacy are combined as the group sings "Old MacDonald Had a Farm," with lyrics written on an experience chart. The teacher points to the words as the children sing.

A unit on dinosaurs generates vocabulary development and an opportunity to read books about the topic, thus integrating literacy into content area experiences. Photo by Joyce Caponigro

During free-play period in the block corner, children construct a zoo from the blocks and install figures of zoo animals. The zoo area includes tickets to be purchased for admission, labeled posters of zoo animals, and pamphlets about zoos and animals. Signs in the area include the name of the zoo, "Don't Feed the Animals," "Be careful, I bite," "Petting Zoo," "Pony Rides," and names identifying various animals.

A simple recipe for modeling dough hangs in the art center. Ingredients and equipment are laid out. The teacher offers assistance. The children follow the recipe and create zoo animals, both activities encouraging conversation.

At story time, the teacher selects an animal book, such as *The Little Red Hen*, for a shared book reading. She reads the story and asks the children to join in every time the animals say, "Not I." After she has read the story, she uses a Big Book to review the pages and points out the words "Not I." She asks the children if they think the little red hen is right in not sharing her bread with the other animals and why.

During an independent reading and writing period, books dealing with the farm, zoo, pets, and woodland animals are featured on the open-faced book shelves. Animal puppets are available to aid in children's storytelling, as are taped stories about animals for listening. The writing area includes animal pictures and words lists, and children are encouraged to write books about animals. Manipulatives include animal puzzles, labeled pictures of animals to be alphabetized, animal Lotto, and animal dominoes.

While focusing on science and social studies, the class discusses its upcoming trip to the farm. With the teacher using an experience chart, the class lists things to remember for the trip: behavior reminders, safety rules, animals of particular interest, things they would like to see or do, and questions to ask the farmer. Each child is encouraged to think of a question accompanied by a picture that will be sent to the farmer in advance. The teacher discusses a recipe for churning butter as was done on the farm years ago. The recipe is in the science center with ingredients for its preparation.

At the end of the day children share items from home related to farm, pet, zoo, or woodland animals. Work that has been done is displayed, shared, and discussed. The day ends with a singing of "The Farmer in the Dell."

It has been a day filled with literacy activities and content learning integrated throughout the curriculum, a day based on a particular theme which has added interest, meaning, and function.

References

Dewey, J. (1966). *Democracy and education*. New York: Free Press.

Heath, S. (1980). The functions and uses of literacy. *Journal of Communications, 30*, 123-133.

Mason, J. (1980). When do children begin to read?: An exploration of four-year-old children's letter and word reading competencies. *Reading Research Quarterly, 23*, 203-227.

Emerging Readers & Writers is a column addressing how preschool and primary grade teachers and parents might promote the development of young children's literacy abilities. Send questions, comments, or suggestions about the column to **Dorothy S. Strickland, Graduate School of Education, Rutgers University, 10 Seminary Place, New Brunswick, NJ 08930, USA.**

EMERGING READERS & WRITERS

Sharing Big Books

Dorothy S. Strickland, Teachers College/Columbia University
Lesley Mandel Morrow, Rutgers University

One of the most effective ways to get young children involved with print is through the use of Big Books. Enlarged texts allow groups of children to see and react to the printed page as it is being read aloud, a factor considered key to the effectiveness of shared reading between parent and child. Many teachers regard Big Book experiences as the closest approximation to family storybook reading one can offer in the classroom. Largely inspired by the work of Don Holdaway (1979), activities with enlarged texts help young learners to understand and experience what it means to be a reader. Fundamental concepts about print are acquired through active participation in a nonthreatening, joyful manner.

Big Books are generally recommended for use with small groups of 6 to 8 children. There is no rule about this, however. We have seen effective use of Big Books with as few as 2 children and with as many as 25. We have also seen them used well with children as young as 2 and 3 years of age and with older children through third grade. A simple book like *Hairy Bear* (J. Cowley and J. Melser, Wright Group) can be memorized by most kindergarten children after the second or third reading. Kindergartners love to modulate their voices from high pitched tones for Mrs. Hairy Bear as she exclaims, "Hairy Bear, Hairy Bear, I can hear robbers," to low pitched voices for Hairy Bear as he replies, "I don't care, I don't care, I'll fim fam fight 'em." On the other hand, *A House Is A House for Me* (M.A. Hoberman, Scholastic) with its longer and more conceptually demanding text might better be used with learners who are more developmentally mature. For example, a group of second graders discussed how the author took a single, rather simple idea and produced many interesting and creative examples: "A glove is a house for a hand; a mirror's a house for reflections." Through brainstorming, their teacher skillfully guided them to generate additional examples on their own: "A peel is a house for a banana; a wallet is a house for some money." As with any materials, the choice of book and the use made of it will depend on the developmental levels of the children in the group.

Patterned and predictable language is a key feature of many Big Books. The predictability of the language and plot make them easy for young children to understand and remember. Patterns may be found in the rhyme or rhythm of the language (e.g., *Over in the Meadow*, HBJ); in the repetition of vocabulary or story structure (e.g., *Brown Bear, Brown Bear*, Bill Martin Jr, Holt) and in the story line or shape of the story (e.g., *The Little Red Hen*, Scholastic). A combination of patterns may exist within one story. Once students "catch on" to the patterns, the book is theirs.

Repeated readings make Big Books a rich resource of language activities. At times, different strategies may be used to strengthen and extend understandings. At other times, a book may simply be reread in unison, with children enjoying the pleasure of their own power over the language and the accomplishment of really knowing a book well. Strickland (1988) offers a number of suggestions for activities to be used with Big Books, several of which are presented here:

- *Tracking print.* After the first or second reading, track the print with your hand or pointer during all or significant parts of the story. You may wish to choose only the repetitive words or phrases, encouraging children to join in as they see and hear the words. Students are helped to get a sense of the directionality of written language and the match of speech to print.
- *Think along.* Occasionally use the first reading as a demonstration of how readers think with text. As you read, think aloud about your own understanding of certain aspects of the story. Model self queries such as: "I bet this is a story about ____." "I wonder what will happen next." "I'm a little confused by ____, but I'll keep reading to find out more." "I would really feel ____ if I were ____." "This reminds me of ____." "Now I understand why ____." As children observe your thinking aloud in this way, they are helped to see that readers are active thinkers who bring what they already know together with what they read to construct their own personal meanings.
- *Cloze activities.* Involve children in the meaningful prediction of words and phrases by pausing occasionally as you read aloud to let them fill in the anticipated language. After several readings, select specific sentences from the story to write on a chart or on the chalkboard and delete one word from each. Encourage them to think of as many contextually plausible words as they can. For example, although children may readily guess that the word *day* fits in the sentence *Tommy*

wore a yellow shirt all ____ long, they will enjoy thinking of other words that might fit in that slot. Words such as *night, month,* and *winter* are good possibilities. Each time a new word is offered it can be written into the blank and tested, through reading, to determine whether or not it fits. Because a word must be both semantically and syntactically appropriate, children learn a great deal about how their language works and their own ability to exercise language power.

- *Examining text features.* Another activity that is appropriate after several readings is to focus children's attention on distinctive features in the text: repeated words and word beginnings (letters, consonant clusters), punctuation marks, and so on. By taking a closer look at the text, students are helped to get a sense of the smaller units of language in relationship to the whole. By informally using letter names and other linguistic terminology (e.g., sentence, word, period, title, etc.) in this context, children learn the language they need to talk about reading and writing so important to language instruction.

Small editions are available for many Big Books. These minisized versions allow children to extend the shared book experience in a personal and independent manner. They enjoy recreating the shared group reading alone, in pairs, or at home with parents. When a limited number of little books are available for an entire class, many teachers place half in the reading corner for independent activities and the other half in a classroom lending library for use at home. After children have had extensive experience with a book at school, they enjoy showing off what they know to siblings and parents.

Publishing your own Big Books for classroom use is an excellent group writing project. Heavy brown butcher paper, doubled for durability, makes sturdy pages. Popular topics include alphabet and number books, calendar books, reaction books (the scariest thing I ever saw), category books (round things, red things), word collections (compound words, alliterative words), and literary anthologies (riddles, jump rope rhymes). Informational books may be based on themes under study: What We Learned About Dinosaurs or All About Our Neighborhood. Books modeled after existing predictable texts are also popular. A book of opposites might be modeled after P.D. Eastman's *Big Dog, Little Dog* (Random House). Publishing Big Books in the classroom allows children to work collaboratively to create text and pictures. Some may use this experience as motivation to create their own individual books.

Concepts about books and print

Book handling & knowledge
Holds book right side up
Turns pages front to back
Front cover
Back cover
Title
Title page
Author
Illustrator

Interest in books & reading
Shows awareness of environmental print
Demonstrates interest in listening to stories
Participates in reading patterned & predictable language
Uses classroom library (self-initiated)
Shows pleasure in "reading" independently
Engages in talk about books & stories
Requests favorite books to be read aloud
Views self as reader

Comprehension
Discusses meaning of stories
Demonstrates predicting and confirming
Infers words in cloze-type activities
Remembers sequence of events in a familiar story
Compares/contrasts books
Understands main idea of a book (this book is about...)
Understands cause and effect in a familiar story
Recalls details from a familiar story

Concepts about print
Print evokes meaning
Pictures enhance meaning
Directionality
Word
Letter
Sentence
Period
Question mark

By moderately structuring the introduction of various print concepts throughout the year and observing their development, the use of Big Books can be the foundation of a program for emergent readers. Use the chart Concepts about Books and Print as a guide for observing young children's reading development as you share Big Books and other literature. There is no strict hierarchy to the lists in the chart above. Simply keep these concepts in mind and embed them within the daily reading activities. Most importantly, continuously observe to see how well children are progressing with them.

References
Holdaway, D. (1979). *Foundations of literacy.* Sydney, Australia: Ashton Scholastic.
Strickland, D.S. (1988). Some tips for using big books. *The Reading Teacher, 41,* 966-968.

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EMERGING READERS & WRITERS

Young children's early writing development

Dorothy S. Strickland
Lesley M. Morrow

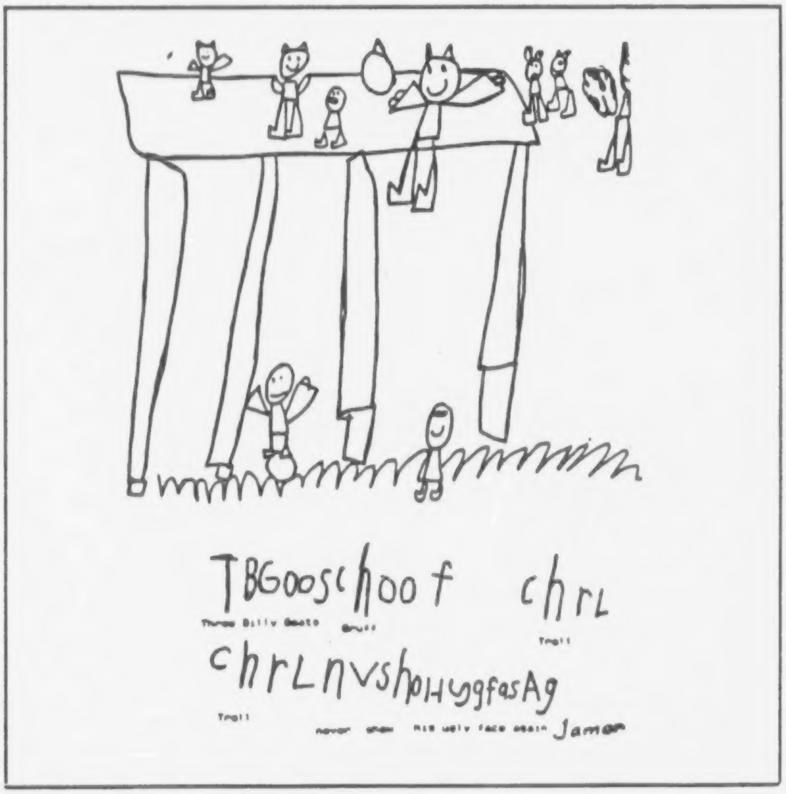
Jamar's written retelling of an episode from "The Three Billy Goats Gruff" is included in a wonderful collection of writing from Georgeann Rettberg's kindergarten in Pittsburgh, Pennsylvania. Jamar's piece and the others in "R fAVR it fere tels" tell a great deal about what these children have learned about literature, written language, and the conventions of print.

It is obvious that Jamar has a sense of how pictures and words go together to tell a story. He has labeled the important features of his picture and expressed in writing his strong response to the story's ending.

Jamar is developing a sense of how text looks. He realizes that the word *troll* should be separated from "Three Billy Goats Gruff." Not yet clear to him, however, are the divisions between the words on the second line. Jamar's writing also reveals a developing sense of the relationship between letters and sounds. He chooses letters that correspond with the most distinctive sounds in the words he wants to write, such as *B* for *Billy* and *Goos* for *goats*.

Later, his use of *ch* for *tr* is no doubt related to the sounds he perceives in the word *Troll*. The use of *T* for *Three* is most likely based on his visual memory of a word that is commonly displayed in classrooms and found in early concept books.

Perhaps the most important point for us to recognize is that Jamar is drawing on a wealth of experience with print and that he is employing a variety of strategies to express his ideas through writing. Jamar's paper is an excellent example of the very natural and normal developmental writing behaviors of children who are lucky enough to be in a print rich environment.



This written retelling of an episode from "The Three Billy Goats Gruff" shows a kindergartner's grasp of the relationships between text, story, and illustration.

Encouraging writing

Attention to children's writing at the prekindergarten and kindergarten level is relatively recent. At this level, if literacy was encouraged at all, the focus was on reading as a prerequisite to writing. When writing was finally introduced in the primary grades, the focus was mainly on copying words and sentences. Neatness, correct spelling, and handwriting skills were emphasized rather than the expression of ideas.

Now, research on children's emerging literacy reveals that when children have frequent opportunities to explore with writing materials, they make attempts at written expression even with very limited ability to read.

When young children write, the interrelationships among reading, writing, listening, and speaking are obvious. What they learn from one aspect of the language arts is used to explore and develop the others. We observe their developing sense of language as systemic and rule governed and we see the direct application of that knowledge to their efforts at written expression.

Today's teachers of young children are investigating ways to encourage the writing process and to learn more about the concept of invented spelling. Publications such as *The Beginnings of Writing* by Temple and others (Allyn & Bacon) and *Language Stories and Literacy Lessons* by Harste, Burke, and Woodward (Heinemann) are excellent resources. Following are some tips for getting started.

A writing environment

Create an environment that encourages children to write. Provide a writing center or table that is equipped with various kinds of paper, writing utensils, the alphabet at eye level, alphabet books, and three dimensional letters. Provide daily opportunities to visit the writing center.

Allow children to share what they compose. Whether it be drawing, scribbling, or the beginnings of letter formation, treat it as written communication – a means of expressing ideas.

Model the writing process yourself. Create charts, lists, signs, and posters with the children's help. Have children observe you read and respond to written communication.

Be aware that young children's drawing and writing are highly integrated. Often, writing will begin with a picture, which is later supplemented by written symbols. In some cases pictures and symbols may be intertwined to provide a mosaic of graphic representations.

Spelling

Learn as much as you can about young children's invented spelling. For example:

Invented spellings are the early spellings that children produce independently. They result from children's natural encounters with print.

Although each child's development is unique, there are some general patterns to children's spelling and writing development. Scribbling, sometimes called pretend writing, often represents the child's first efforts to communicate through writing. Scribbling generally begins at home and may last only a brief time. Children frequently accompany scribbling with a running monologue, demonstrating their understanding that written symbols are a means of communication.

Scribbling may be accompanied by or be replaced by one letter spelling. Given the opportunity to select features that are meaningful to them, children frequently use the initial consonant or some other distinctive consonant in a word, such as *d* for *dog*.

As they continue to experiment with spelling, other distinctive consonants are added in final and medial positions along with other groupings of letters such as *shz* for *shoes*. Vowels are generally established much later than consonants.

Eventually, two and three word sentences begin to appear and it becomes obvious that these young spellers are developing simple rules. Although their application of rules will not necessarily conform to adult norms (*mi* for *my*, for example), they do demonstrate a growing awareness of the patterns in the language.

Children should be encouraged to experiment with writing and to invent their own spellings. This does not mean that they should be instructed to spell phonetically, since this may lead them to accept misspellings as correct. Children are aware that their invented spellings may not conform to adult norms. As with other areas of their development, they view themselves as young learners gradually moving toward adult standards.

Spelling is developmental. As in other areas of development, don't expect complete correctness. Focus instead on the child's emerging ability to compose through writing and never let spelling interfere with the composing process.

Most important, let children experience the joy of composing in many forms: art, music, movement, drama, storytelling, and of course – writing.

This series is prepared by **Dorothy Strickland** of Teachers College/Columbia University and **Lesley Mandel Morrow** of Rutgers University. Send comments to **Dorothy Strickland, Teachers College Box 135, Columbia University, New York NY 10027, USA.**

EMERGING READERS & WRITERS

Developing skills: An emergent literacy perspective

Dorothy S. Strickland, Teachers College/Columbia University
Lesley Mandel Morrow, Rutgers University

During the past year, we have had numerous opportunities to talk to teachers about the content of this column. The ideas we have shared about emerging readers and writers appeal to early childhood educators, because they are consistent with what they know about other aspects of children's development.

Yet, despite the fact that most teachers embrace the notion of emergent literacy as developmentally sound, many voice concern that this approach may neglect the development of the important skills children need to be successful in school. They acknowledge that children do acquire positive attitudes about reading and writing, but they ask "Will they acquire the foundation skills needed to become competent readers and writers?"

Too often, the knowledge that an emergent literacy perspective better serves the child's present and future skill development is lost in the perceived need for children to demonstrate competence in specific subskills thought to be needed for success in beginning reading and writing. Teachers who view literacy as a natural part of children's ongoing development tend to view skills as interconnecting parts of a whole. They are concerned with helping children develop strategies for learning to read and write. They know that as children acquire strategies they automatically acquire skills. Skills never function in isolation, rather they are used as components of strategies in children's attempts to construct meaning with language. Thus, a focus on learner strategies both develops and depends on skill, but a focus on skills in isolation offers little or no support for strategic learning.

Carl, a kindergartner, provides an example. He was overheard recalling the *w* words in *Mrs. Wishy Washy* as he attempted to determine how the *once* began, as in *Once upon a time*. Jan, his teacher, was delighted because she knew that Carl was drawing on his growing knowledge of the patterns in the language. Unlike the child who simply repeats *Wuh* when shown the letter *W*, Carl had learned that there are some consistencies in the language that can be relied on much of the time. *W* was at least worth exploring to get his story going.

Several stories later, Jan noted that the word *once* had undergone several changes. Starting with *wus*, Carl soon changed to *wuns*, at which time he began to feel uncomfortable with that spelling and asked another child for help. He was told to "Check it out in the Cinderella book." His next attempt, *wonce* revealed a need to hold on to the letter *w* despite what his eyes had revealed. Finally, he let go of *w* and the spelling *once* appeared. As Jan reviewed a collection of Carl's stories, she noted that at the same time that his spelling was evolving and maturing, Carl's stories were becoming more complex and more fully developed. He had learned important lessons about the consistencies and the inconsistencies of his language while his ability to compose (the very reason for learning to spell) was allowed to flourish.

Jan set up the conditions for this to happen. She carefully monitored his acquisition of skills as he demonstrated increasingly mature attempts to use the strategies he was acquiring. Thus, in the attempt to develop skill in reading and writing, important skills were constantly being honed and fine-tuned. Contrary to being ignored or neglected, skills were given attention in a functional and purposeful manner, embedded within the process of learning to read and write.

Following are some of the questions teachers have asked about the place of skills from an emergent literacy perspective.

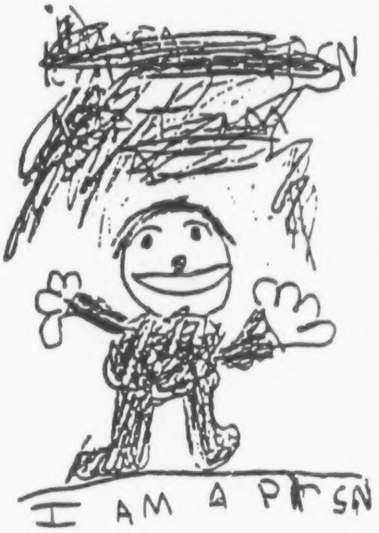
1. *Is an emergent literacy perspective anti-skills?*

Certainly not, but there is confusion over the interpretation of the term within early literacy programs. We looked up the word *skill* in several dictionaries. Most often it was defined as proficiency or ability to *do* a task. Yet, in early childhood literacy programs, skill frequently refers to the accumulation of information *about* a task, particularly reading and writing. Knowing the names of the letters, the sounds related to them, and certain basic relational concepts, as demonstrated on paper and pencil tasks, are considered skills. Yet, are they? Rather than demonstrate genuine understanding or proficiency in an authentic literacy task, these so-called skills frequently demonstrate superficial knowledge about aspects of a task. Unfortunately, the topic becomes even more confusing when some educators, in an attempt to make this very point, state that in holistic programs that foster an emergent literacy point of view, skills are not important. No wonder teachers are confused. Many of the instructional programs on which they rely have confused ability to *do* with information *about*, leaving teachers with the task of sorting out the actual skills.

2. *If skills are not taught in a prescribed and orderly manner, how will teachers know that they have been learned?*
Although much is known about the general patterns of literacy development in young children, there is no fixed or even preferred order of development for all children. Much of the learning depends on the child's understanding of the nature of the task. Teachers need to know what skills underlie certain strategies. They also need to be able to recognize when strategies are present, when they are not, and how they can help children acquire them. Teachers can use checklists and guides to give them some idea of what can generally be expected of most children at a given age or grade. The best way to know what skills children have acquired is to provide for and observe their use.

3. *What about minority students; don't we do them a disservice by not emphasizing the skills?*
These children depend on our help to ease them into the mainstream. They need to be able to say their abc's and know their sounds if they want to compete with other children. We believe that all children have a better chance of succeeding in school when they are taught in a manner that values their cultural and linguistic backgrounds and supports their natural inclination to learn. The best teaching empowers children to become independent learners is a belief that is often reflected in the instruction for middle class children. Poor and minority children are more likely to be offered readiness programs that stress the acquisition of isolated, low level skills. Such programs do not help them become strategic in their thinking.

4. *Can all this reading and writing be harmful? Are we pushing children too fast?*



A Fairfax County, Virginia, kindergartner thoughtfully works on her spelling until she gets her very profound message just as she wants it.

The whole point is not to push or pull, but to offer opportunities for reading and writing along with blocks, water play, woodworking and all the other good experiences we give young children.

5. *What happens when teachers in the same school differ widely in their approach to literacy?*
Continuity within the early childhood program is an absolute must in order to accomplish the goals set forth here. Children who are allowed to flourish in a print-rich, emergent literacy environment in prekindergarten and kindergarten only to be faced with a strong subskills approach in first grade, are likely to be terribly confused. Worse yet, they may be unable to demonstrate what they know in a manner that is valued by the first grade teacher. Consider the confusion and frustration evident in the following episode.

> Pamela and her mother were quite upset when her first grade teacher sent home a report with a checkmark in the "NO" column after the item Knows ABC's. The previous spring, Pam's kindergarten teacher had passed along a folder of her writing, which included all but a few of the letters of the alphabet. Pam could read her own writing and she knew the names of the letters she used. She could identify the letters and the names of the four members of her family. Pam had never learned the alphabetic sequence, however. Since she has no use for the telephone book or the dictionary, there has been no attempt to teach alphabetical order. Unfortunately, her first grade teacher felt Pamela was ill prepared. To her, the ability to recite and identify the letters in alphabetical order was an important prerequisite for success in first grade.

Program continuity cannot be overly stressed. Collaborative decision making both within schools and between schools and early childhood centers that feed into them is essential.

6. *Does teaching skills using a more holistic approach require a more skillful teacher?*
In our opinion, teachers who know and put to use what has been learned about young children's language and literacy development are indeed more skillful. More important, however, we are convinced that teaching this way develops a more skillful child.

Emerging Readers & Writers is a column addressing how preschool and primary grade teachers and parents might promote the development of young children's literacy abilities. Send questions, comments, or suggestions about the column to **Dorothy S. Strickland, Teachers College Box 135, Columbia University, New York, NY 10027, USA.**

EMERGING READERS & WRITERS

Oral language development: Children as storytellers

Dorothy S. Strickland, Teachers College/Columbia University
Lesley Mandel Morrow, Rutgers University

Research indicates that children are active participants in their learning of language. They learn language in social contexts, interacting with other children and adults and actually constructing (or reconstructing) language as they learn. When they don't have the conventional words they need, they play with language and create their own ways of saying things. A four-year-old, for example, noticed a freckled youngster for the first time and said, "Look, that girl has *sprinkles* on her nose."

Much of the language children learn is a reflection of the adult models to which they are exposed. Adults expand and scaffold (i.e., support) appropriate responses for children as they interactively encourage children's attempts to make better and better responses of their own. Studies illustrate that development of vocabulary and syntactic complexity in oral language is enhanced in children who are frequently exposed to stories. Reading stories to children gives them a model for developing vocabulary and syntax. On the playground one day, a kindergartner said, "Look, the birds are fluttering and flapping around us." She was modelling language from a book read to her in class, *Jenny's Hat* (Keats, 1966), in which the birds flutter and flap around the little girl's hat.

Realizing that a child acquires language through active participation and that literature provides rich language models, storytelling in the early childhood classroom is an excellent technique for fostering growth in language. Furthermore, since book language differs from oral language, the exposure to book language that a child receives through storytelling is related to reading development, as well.

To encourage children in your classroom to retell stories, model storytelling for them. Select stories with good plot structures. Be sure you know a story so thoroughly that you can retell it well without having to rely on the text in the book itself. Storytelling does not mean memorizing, by the way. It means telling the story in your own words. If a story includes novel, rhythmical, or repetitive phrases, however, *do* use them in your retelling. Be expressive while telling the story; change your voice to reflect dialogue spoken by different characters; use both voice and facial expressions; retell the story slowly and with animation. Beyond students' immediate enjoyment, your purpose for telling stories to children is to provide them with a model to imitate. Therefore, you want to do it well.

Storytelling is initially difficult for young children. They can be helped in their first attempts by your modelling the behavior for them. You may wish to tell a story several times before encouraging children to tell it. This way telling will be easier since the children will be familiar with the story. They need to be told in advance of listening to a story that they will be telling it. A child's ability to tell determines how much guidance is required. If a child has difficulty beginning the story, suggest starting with "Once upon a time," or "Once there was...." If the child stops telling before the end of a story, encourage continuation by asking, "What comes next?" or "Then what happened?" If the child stops telling and cannot continue even with prompts offered, ask a question about the story that is relevant at the point in the story at which the child has paused. Using the pictures in a book or using props that represent characters or episodes in a book are helpful in a child's initial storytelling.

Letting every child in a group tell a story to the others can be very time-consuming, but there are alternatives to a whole-group audience. Encourage children to tell stories to each other or into a tape recorder to be listened to by other children, the teacher, or simply themselves. Children are especially comfortable telling themselves stories if they have props to use—a doll as a listener, a stuffed animal character, or finger puppets.

The use of props and other creative storytelling techniques help storytelling come alive, exciting the imagination and involving the listeners. Therefore, encourage children to create or adapt their own techniques. Take clues for creative techniques from the story. Some stories lend themselves to the use of puppets; some are perfect for the feltboard; and still others can be developed as prop stories. After you have demonstrated these techniques, encourage children to tell stories using similar devices. Model the technique; place appropriate materials in the classroom library corner; and suggest that children use them to tell stories during recreational reading time.

Cut-out characters and a feltboard can be purchased or prepared by the teacher. If constructed by the teacher, the characters can be made with construction paper and covered with clear contact paper or laminated. Felt or sandpaper can be attached to the backs of the cutouts so they cling to the feltboard. The board can be made of thick cardboard or a light weight wood covered with flannel or felt. Stories that lend themselves particularly well to feltboard retelling are those with limited numbers of characters.

Prop stories are easy to develop. Props may include stuffed animals, toys and other articles that represent characters and objects in a story, or more conventional puppets. Display the props at appropriate times during the storytelling. For example, three stuffed bears and a yellow-haired doll can be used as props in telling *Goldilocks and the Three Bears*. Stories strong in dialogue are best suited to the use of props representing characters or puppets. There are many kinds of puppets, including finger, hand, stick, and face puppets. Their use often helps shy children feel more secure telling stories (Morrow, 1981).

These techniques and other similar ones are quite effective in getting young children to tell stories. Studies indicate that giving children the opportunity to tell stories helps their language development by enhancing vocabulary, syntactic complexity, sense of story structure, and comprehension. It allows them to become active participants in the creation of language and allows book language to serve as a model for their own. Because children often tell stories cooperatively, to a group of children, or to the teacher, the activity provides a social context, as well.

Playing with puppets will encourage children to tell stories and create their own. This gives them the opportunity to use and develop their facility with oral language. Lesley Mandel Morrow, Literacy Development in the Early Years: Helping Children Read and Write, © *1989, p. 60. Reprinted by permission of Prentice Hall, Inc., Englewood Cliffs, NJ.*

Reference

Morrow, L.M. (1981). *Super tips for storytelling.* Duluth, MN: Instructor Books.

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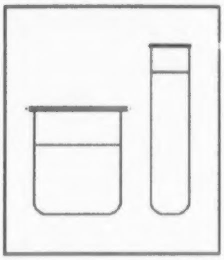
Science Instruction for Young Children



There has been growing concern about education in math and science in the past few years. In the area of science instruction, the situation is much worse than schools simply "failing to create" budding scientists. Instead, educators often take young children who constantly demand why and how and ..."who poke and drop and squeeze like the most exuberant experimenters-- and turn them off to science completely and irreversibly." As Nobel Prize-winning scientist, Leon Lederman says, "Schools take [young children who are] naturally curious, natural scientists and manage to beat that curiosity right out of them." As curiosity dies, so does a child's interest. As early as the third grade, half of all students do not like science; by eighth grade, eighty percent dislike it. There are several reasons to account for these disheartening statistics. Foremost among them is the fact that:

> Most schools still teach science by lecture, textbook and memorization. Those three unnatural elements combine to produce a familiar chemical reaction: boredom (Newsweek, April 1990).

Effective Science Instruction

The best way for students to learn science is to have them do science. This is absolutely critical with young children. Instead of rote memorization, young children should observe, measure, collect, categorize, record and classify data. The same logic holds true for math, reading, and other subjects. Children learn to read by being read to and by reading. Children learn best by doing. The younger the child, the more critical this is.

The best science lessons emphasize depth rather than breadth. It is more time-consuming to involve children in active learning, but the lessons stay with them. However, teachers also need to remember that active involvement alone is not a panacea. It is just as possible to have a mindless hands-on program as a mindless textbook program. What educators are realizing is that they should teach "interesting" and important concepts to young children and make sure they understand them, rather than try to fill their heads with unconnected scientific facts.

We do not need to follow an age-specific science curriculum with young children, but rather a sequential curriculum that relates each new concept to previously-learned information from the child's personal experience. In this way we construct solid learning that children understand thoroughly and can use with ease and flexibility.

Studies of memory show that people tend to remember experiences that have a high emotional content. In school, that emotion can be surprise. Teachers of young children can spark curiosity by presenting something unexpected or something that initially appears familiar, but upon examination responds or reacts in unexpected ways. Science demonstrations are natural vehicles to arouse children's interest and curiosity about the world around them. If a teacher demonstrates something to a class that has an unexpected ending or turn of events, young children will automatically become interested. They will ask why or how it happened. They can then be encouraged to go on to do investigative "scientific" work until they can come up with an answer that seems sensible to them.

Powerful natural occurrences such as snowstorms or thunderstorms can also cause strong feelings in children that motivate a desire for scientific exploration. This kind of exploration is very effective because it has immediate meaning and significance in the children's lives-- it can be a means of answering questions that are important to them. Because the interest and feelings are strongest right after the experience, it is best to take advantage of an unexpected occurrence and engage in the exploration as soon as possible. It requires a great deal of flexibility to drop a planned activity in order to respond to the opportunity, but it is worth the effort to take advantage of these "teachable moments" in children's lives.

Science Activities and Cognitive Development

Learning takes place through a number of processes in the early years of childhood. These processes include identifying, comparing, generalizing, classifying, grouping, ordering, symbolizing, combining, and reasoning (Hartley, 1971). Through these processes young children acquire the concepts needed for thinking, which include concepts of objects, qualitites of objects, and characteristics of substances (form, color, texture, consistency, elasticity, permeability, solidity). Young children also need to acquire relational concepts, i.e., relationships of object to object, of part to whole, and of part to part. Relational concepts also include quantitative relationships such as number, ordination (rank), equivalence, size, volume, and conservation. For young children, those concepts are based on such simple learning as: what is more and what is less; what is larger and what is smaller, what is heavier and what is lighter; that a group is more than one; that a group of many is different from a group of few; that two small parts can equal one larger whole; that objects can be arranged in an orderly progression; that a given amount remains the same no matter into how many parts it is divided or what shape it takes. Young children need to learn relationships of objects in space: up-down, in-out, far-near. They need to understand sequences, beginnings and endings. They need to know about natural forces such as gravity, electricity, magnetism, air, fire, and water. They need to know about natural processes such as birth, growth, decay, and death. They also need to begin to comprehend the relationship between events, i.e., causation.

Children acquire the necessary abilities and understandings of concepts and object characteristics through a wide variety of repeated, concrete experiences. Both variety and repetition are essential. Children have to taste, feel, smell, hear, and manipulate objects as well as see them over and over again in order to know what they are like and how they behave. By giving children access to many different kinds of materials and the freedom to explore them, we enable them to recognize objects and actions and become aware of similarities and differences. This helps them learn to classify and provides the foundation for more abstract thinking. Children also need to develop skill in problem-solving, which is, in part, based on attitudes such as a willingness to ask questions, to experiment, to explore different ways of doing things, and to try out alternatives

Acquiring the necessary understandings and attitudes should be the focus of science instruction for young children. Jean Marzollo's *The New Kindergarten: Full Day, Child Centered, Academic,* Butzow and Butzow's *Science Through Children's Literature: An Integrated Approach,* and Dinah Moche's *Magic Science Tricks* are good sources of science activities that develop those understandings and attitudes. Activities from standard science texts used in higher grades can also be adapted for use with young children based on developmental principles. (One teacher adapted ninth grade science experiments for use with first graders.)

K-W-A-L (already Know/Want to know/Anticipate/Learned) is a good **strategy** to use to reinforce children's curiosity while developing advanced skills. Handouts describing the K-W-A-L strategy and some science activities for young children are attached. K-W-A-L (adapted from the KWL reading strategy [Ogle, 1986]) emphasizes active, inquiry-based learning that starts with what children already know as a base for introducing any new information.

Science in an Integrated Curriculum

According to both the National Association for the Education of Young Children (1989) and the National Association of Elementary School Principals (1990), young children need a curriculum that is integrated rather than taught as discrete subjects. Whenever possible, science concepts and skills should be taught with reading, mathematics, social studies, art, ... and vice versa. The instruction may be organized in thematic units or instruction might evolve from a natural occurrence (such as those listed above, e.g. snowstorm) that the teacher helps the class explore using as many other disciplines as appropriate. What starts as a "scientific" exploration of a snowstorm might incorporate learning about people in cultures who live with snow year round or with no snow whatsoever; it might lead to language exploration about the many words the Eskimos (Inuits) have for "snow,".... It might also lead to reading a piece of children's literature like Virginia Lee Burton's *Katy and the Big Snow* which might in turn be the basis for learning about responsibility, city government, ...

Children's literature can be the motivation for very fruitful scientific inquiry. Since literature has the power to move us emotionally, it also has the potential noted earlier for making that instruction more memorable. Robert McCloskey's *Make Way for Ducklings* might be the basis for learning about migration, animal habitats, ... William Joyce's *Dinosaur Bob and His Adventures with the Family Lizardo* might be the basis for learning about dinosaurs, when they lived, why they disappeared, how we know about them, ... Judi Barrett's *Clouds with a Chance of Meatballs* might be the basis for learning about gravity, real weather patterns, prediction, ... Beverly Kobrin's *Eyeopeners! How to Choose and Use Children's Books About Real People, Places, and Things* and Jim Trelease's *The New Read-Aloud Handbook* are good resources to help you find and effectively use children's literature; both books contain annotations which will help you select books that can most easily be used to motivate scientific inquiry or fit your science themes.

Carol and John Butzow's *Science Through Children's Literature: An Integrated Approach* (1989) contains a chapter about how to integrate science and reading as well as an excellent resource bibliography and specific science activities based on 33 children's books. The books used as instructional models by the Butzows are primarily picture books appropriate for preschool and grades K-3, i.e., *Mike Mulligan and His Steam Shovel* (Burton), *Make Way for Ducklings* (McCloskey), *The Very Busy Spider* (Carle), *Swimmy* (Lionni), *Sadie and the Snowman* (Morgan), and *Strega Nona's Magic Lessons* (dePaola). In addition, there are brief annotations of over 81 children's books in the bibliography. Two articles in *The Reading Teacher,* "Materials for Integrating Science and Social Studies with Language Arts" (Spiegel, October 1990) and "Exploration and Discovery: Books for a Science Curriculum" (Galda & DeGroff, December 1990), are also excellent sources for literature to use in an integrated science curriculum.

Summary

The keys to effective science instruction for young children are--

- letting children learn by doing, through repeated, concrete experiences;
- teaching a few concepts in greater depth rather than many concepts in little depth;
- working with questions that evolve from the children's world and experience;
- using the power of emotion (from real events or literature) to motivate and/or reinforce scientific learning; and
- teaching science as part of an integrated curriculum.

References

Barrett, J. (1982). *Clouds with a chance of meatballs.* New York: Atheneum.[Pre-S to 5th gr]

Burton, V. L. (1939). *Mike Mulligan and his steam shovel.* Boston: Houghton Mifflin.

Burton, V. L. (1974). *Katy and the big snow.* Boston: Houghton Mifflin. [Pre-S to 2nd gr]

Butzow, C. M., & Butzow, J. W. (1989). *Science through children's literature: An integrated approach.* Englewood, CO: Teacher Ideas Press, A Division of Libraries Unlimited, Inc.

Carle, E. (1975). *The very busy spider.* New York: G. P. Putnam.

dePaola, T. (1982). *Strega Nona's magic lessons.* New York: Harcourt Brace Jovanovich.

Galda, L., & DeGroff, L. (December 1990). Exploration and discovery: Books for a science curriculum. *The Reading Teacher,* 44 (4), 316-25.

Hartley, R. E. (November 1971). Play, the essential ingredient. *Childhood Education,* 80-84.

Joyce, W. (1988). *Dinosaur Bob and his adventures with the family Lizardo.* New York: Harper & Row. [Pre-S to 4th gr]

Kobrin, B. (1988). *Eyeopeners! How to choose and use children's books about real people, places, and things.* New York: Viking.

Lionni, L. (1963). *Swimmy.* New York: Random House.

Marzollo, J. (1987). *The new kindergarten: Full day, child centered, academic.* New York: Harper & Row.

McCloskey, R. (1976). *Make way for ducklings.* New York: Puffin Books, The Viking Press. [Pre-S to 2nd gr]

Moche, D. (1977). *Magic science tricks.* New York: Scholastic Inc.

Morgan, A. (1985). *Sadie and the snowman.* New York: Scholastic.

National Association for the Education of Young Children. (1989). *Appropriate education in the primary grades: A position statement.* Washington, DC: NAEYC, pp. 22-23.

National Association of Elementary School Principals. (1990). *Early childhood education and the elementary school principal: Standards for quality programs for young children.* Alexandria, VA: NAESP, p. 4.

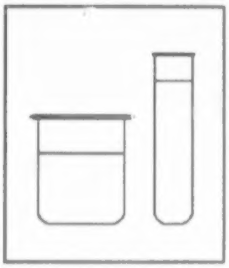
Ogle, D. (February 1986). The K-W-L: A teaching model that develops active reading of expository text. *Reading Teacher,* 39 (6), 564-570.

Rx for Learning. (April 1990). *Newsweek,* 65 (15), pp. 55-56.

Spiegel, D. L. (October 1990). Materials for integrating science and social studies with the language arts. *The Reading Teacher,* 44 (2), 162-165.

Trelease, J. (1989). *The new read-aloud handbook.* New York: Penguin Books.

K-W-A-L Strategy: Know/Want to Know/Anticipate/Learn



A Predictive Investigation Strategy, K-W-A-L, can be used to aid young children's investigations of the world around them. It is an adaptation of the K-W-L strategy fostered by Donna Ogle to aid older children's reading of expository text. The letters K-W-A-L stand for four steps to actively involve children in learning new information. The letters stand for :

1. **K = KNOW**. *The children recall all they already know about the topic*. The child says, "I know . . . about [the topic]." For the topic birds, a child might say, "I know birds lay eggs," or "I know birds fly."

2. **W = WANT**. *The children think of what new information they want to know about the topic*. The child says, "I want to know . . . ." For example, "I want to know if birds sometimes crush their eggs when they sit on them."

3. **A = ANTICIPATE (or predict)**. *The children anticipate or guess what they will find out about the topic*. The child says, "I think [anticipate] that the answer will be . . . ." For example, "I think I'll find out that birds do crush their eggs." Children then plan how to find their answers.

4. **L = LEARN.** *The children carry out their plans and discuss what they have learned as a result of their investigations on the topic*. They can also note their affective response to the information, e.g., say how the information made them feel. The child says, "I learned that . . . ." For example, "I learned that birds don't crush the eggs by sitting on them unless they eat poisons like DDT. I'm glad."

Teachers can first model and stimulate the kinds of thinking and questions that may be asked about new phenomena and then give the children individual opportunities to share and ask their own questions.

KNOW Stage (K)

The teacher can engage the children in a group discussion of what they already KNOW about the concept. When disagreements or questions emerge, the teacher can note these and suggest that the children see if they can do further investigations to find out what the answer is. Anything the children say they "know" is included initially, even if the teacher knows it is wrong. Later investigations should serve to correct misinformation more concretely than an oral explanation by the teacher. Plus, it encourages participation by all children without fear of being "wrong."

WANT to Know Stage (W)

This stage can be done most personally in small groups, although it can also be done in a large group, if desired. Divide the children into groups of 2 or 3 children. Each small group is asked to think of 1 to 3 questions, depending on age, that they want to learn about the topic. They should record their questions. The children also discuss how they might find out information about the topic.

ANTICIPATE Stage (A)

The pairs or trios of children next try to anticipate or guess what the answers to their questions will be. These should be recorded in some fashion. Young children may group actual objects, draw, or manipulate pictures according to what they expect to occur.

LEARN Stage (L)

The children then carry out their investigations to see if they are right. They might watch a demonstration; examine an object; explore a concept; interview "experts" including parents, teachers, librarians, etc.; listen to a story; watch a movie; visit a site; or pursue another activity with their questions and expected answers in mind to discover whether or not their information is accurate for the situation. Their findings should be recorded. After their detective work, the whole group reassembles to summarize and discuss what was learned. Their initial questions may be reviewed to see whether or not they were resolved, and if so, how. If some questions have still not been answered, students can be encouraged to continue their search for information by further detective work. [See K-W-A-L chart at the end of the handout for one method of recording information.]

KWAL Activities

The best way to do KWAL activities is to involve children in group projects where they investigate some problem in their immediate environment. The projects can deal with a general theme of interest to the children. The children should be given a choice in the matter.

There are many in-depth investigations that can be used to stimulate children's creative abilities while engaging their minds with an intellectual focus.

These kinds of activities all help children to:

-plan
-observe
-inquire
-experience
-interact socially
-develop language skills, and
-reconstruct aspects of their environment.

At the same time, they provide opportunities for the children to apply basic as well as more advanced skills.

The project can be anything that depends on the children's understanding of events and objects around them and concerns matters with which they have first-hand knowledge. For example, the children could investigate common questions they have about grocery stores, or they could visit a nearby construction site, take a bus ride, study the school bus, examine certain animals, etc. A special effort should be made to introduce young children to famous sites or items of special interest in their immediate communities.

Each child can focus on items of special interest to him or her. For example, if exploring a school bus, different children might be interested in: checking the lights, motor, horn, brakes, doors; counting the seats; measuring the width of the bus, checking air pressure in the tires, etc. The projects can also focus on culturally relevant experiences. Children can share information about special holiday customs or preparation of special foods, etc.

Whatever the activity, involve the children in planning. Help them choose what to do. Help them learn rich, relevant vocabulary words and draw, paint, and create after their exploration. Related follow-up activities to extend the learning can take several days or even weeks, depending on the children's ages and the type of project.

Whatever project is chosen should provide ample opportunities for each child to apply the skills he or she already has or is just starting to learn.

Reference

Ogle, D. (February 1986). The K-W-L: A teaching model that develops active reading of expository text. *Reading Teacher,* 39 (6)), 564-570.

K-W-A-L
A Predictive Investigation Strategy

What I Already KNOW	What I WANT to Know	What I ANTICIPATE I Will Find	What I LEARNED

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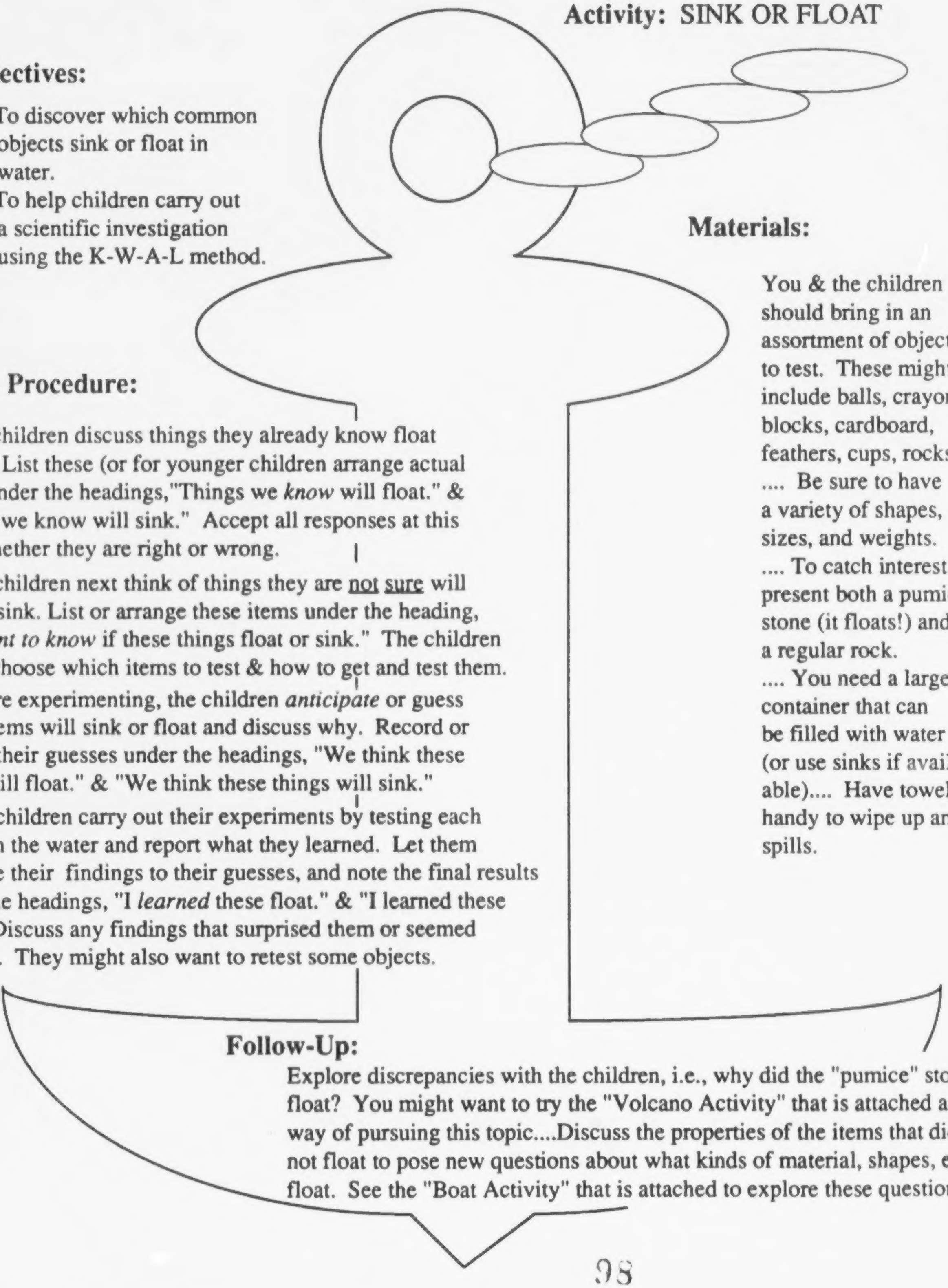
Science Activity for Young Children

Activity: SINK OR FLOAT



Objectives:

-To discover which common objects sink or float in water.

-To help children carry out a scientific investigation using the K-W-A-L method.

Materials:

You & the children should bring in an assortment of objects to test. These might include balls, crayons, blocks, cardboard, feathers, cups, rocks, ... Be sure to have a variety of shapes, sizes, and weights. .... To catch interest, present both a pumice stone (it floats!) and a regular rock. .... You need a large container that can be filled with water (or use sinks if available).... Have towels handy to wipe up any spills.

KWAL Procedure:

1. The children discuss things they already know float or sink. List these (or for younger children arrange actual items) under the headings,"Things we *know* will float." & "Things we know will sink." Accept all responses at this stage whether they are right or wrong.

2. The children next think of things they are not sure will float or sink. List or arrange these items under the heading, "We *want to know* if these things float or sink." The children should choose which items to test & how to get and test them.

3. Before experimenting, the children *anticipate* or guess which items will sink or float and discuss why. Record or arrange their guesses under the headings, "We think these things will float." & "We think these things will sink."

4. The children carry out their experiments by testing each object in the water and report what they learned. Let them compare their findings to their guesses, and note the final results under the headings, "I *learned* these float." & "I learned these sink." Discuss any findings that surprised them or seemed unusual. They might also want to retest some objects.

Follow-Up:

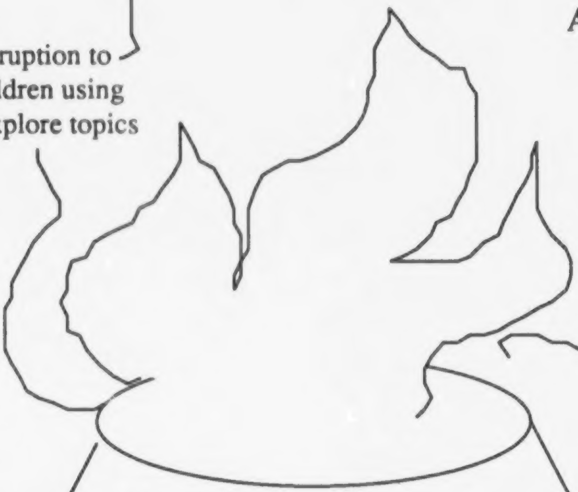
Explore discrepancies with the children, i.e., why did the "pumice" stone float? You might want to try the "Volcano Activity" that is attached as one way of pursuing this topic....Discuss the properties of the items that did & did not float to pose new questions about what kinds of material, shapes, etc. float. See the "Boat Activity" that is attached to explore these questions....

Science Activity for Young Children

Activity: VOLCANOS

Objective:

To simulate a volcanic eruption to provide the basis for children using the KWAL method to explore topics related to volcanos.



Materials:

A large pan, wet sand, empty orange juice container or can, & measuring cups.
1/4 cup baking soda,
1 cup of water,
3/4 cup of vinegar,
1/2 cup liquid dishwashing soap,
8 drops red food coloring.
Pictures of volcanos &/or movies showing volcanic eruptions.

Procedures:

Fill a large pan with wet sand, insert an empty orange juice container or other can into the sand, & pack sand up around the outside of the can into a mountain shape.

The children can decorate the area around the "mountain" with stick or cardboard trees & flowers & clay or plastic creatures.

Place 1/4 cup of baking soda into the can. Next, in a large measuring cup, mix: 1 cup of water, 3/4 cup of vinegar, 1/2 cup of liquid dishwashing soap, & 8 drops of red food coloring.

Pour the mixture into the "volcano" & watch it erupt!

Follow-Up w/KWAL:

1. The children share what they *know* about volcanos. Use the heading, "We know . . . ." Record all responses whether they are right or wrong.
2. The children think of new information they *want to know* about volcanos. Record these under the heading, "We want to know . . . ." The children decide which questions to investigate & how to do so.
3. The children *anticipate* what they think they will find before investigating. Record these guesses under the heading, "We think we will find out that. . . ."
4. The children conduct their investigations & record their findings under the heading, "We *learned* that . . . ." Discuss these findings & plan related activities to investigate surprising results, i.e., find out how air gets trapped inside volcanic rock (pumice).

Science Activity for Young Children

Activity: BOATS

Objective:

To investigate what factors keep "a boat" afloat and/or make it sink.

KWAL Procedures:

1. Have children discuss/record the things they already know about things that float or sink under the heading, "We know . . . ." Make another list of things they know about boats.

2. Ask the children what materials they think they can use to make "boats." You might add one or two other materials for consideration. List the responses under the heading, "We want to know . . . ." The children should plan how to find the answers including making choices about materials and methods.

3. Before conducting their tests, the children should record what they think will happen, i.e., "We think a boat made out of . . . will . . . ." They should discuss the reasons for their expectations.

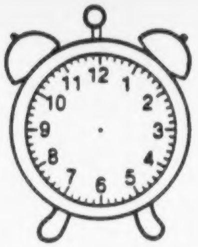
4. The children carry out their experiments by constructing & testing their boats in the planned manner. Their findings are recorded under the heading, "We learned that . . . ." They should discuss whether the results surprised them or seemed unusual. They might want to do some revising and/or retesting.

Materials:

A variety of materials from which to construct "boats," such as cork, a piece of wood, an empty milk carton, an empty plastic cup, half of an orange hollowed out, styrofoam "peanuts" found in packing materials, egg cartons, walnut shells, ... A large container for water (or a sink or bathtub).... Materials for "masts" &"sails," such as toothpicks, pipe cleaners, popsicle sticks, pieces of balsa wood, fabric, tissue paper, ... Scissors.... Supplies for fastening, such as glue, tape, rubber bands, ...

Follow-Up: Discuss discrepancies with the children, i.e., why did a boat made out of material that usually floats sink? This should lead to a discussion and/or subsequent investigations of size, shape, ... Children might be interested in finding out about unusual boats like Thor Hyerdahl's Kon Tiki or the Minnesota "milk-carton boat race." .... Children may want to investigate ways boats are "powered," i.e., oars, sails, steam engines, ... They might want to explore uses for boats, i.e., for transportation of cargo or people, entertainment, or sport, ... They might look into dangers to the environment from tanker spills, ...

Sample Daily Schedules



Half-Day Preschool

8:00 - 8:30	Greeting/Story
8:45 - 9:00	Planning
9:00 - 9:50	Work Time
9:50 - 10:00	Clean-up
10:00 - 10:15	Recall
10:15 - 10:30	Snack
10:30 - 10:45	Circle
10:45 - 11:00	Small Group
11:00 - 11:30	Outside/Departure

Half-Day Head Start

8:30 - 8:40	Greeting/Washing Hands
8:40 - 9:00	Breakfast/Brush Teeth
9:00 - 9:10	Circle
9:10 - 9:20	Planning
9:20 - 10:10	Work Time
10:10 - 10:25	Clean-up
10:25 - 10:35	Recall
10:35 - 10:55	Small Group
10:55 - 11:05	Story
11:05 - 11:30	Lunch/Departure

Full-Day Day Care Center

6:30 - 8:30	Arrival/Breakfast/Free Choice
8:30 - 8:40	Clean-up
8:40 - 9:00	Circle
9:00 - 9:15	Planning
9:15 - 10:00	Work Time
10:00 - 10:10	Clean-up
10:10 - 10:20	Recall
10:20 - 10:40	Small Group
10:40 - 11:30	Outside
11:30 - 11:45	Bathroom/Wash Hands/Prepare for Lunch
11:45 - 12:30	Lunch/Brush Teeth
12:30 - 1:00	Quiet Activities/Prepare for Naps
1:00 - 3:00	Nap Time
3:00 - 3:30	Wake/Bathroom/Snack
3:30 - 6:00	Free Choice or Outside/Informal Plan-Do-Review

[From: *Introduction to the High/Scope Curriculum (Two-Day Workshop #1).* (1986). Ypsilanti, MI: High/Scope Educational Research Foundation, p. 31.]

A Multi-Age Grouping Class Schedule

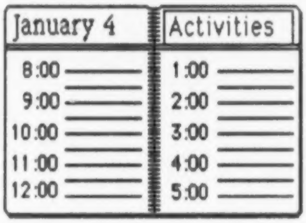
This plan illustrates a typical day schedule for a multi-age grouped class. There are two classes located in separate rooms. One class has 4, 5, 6 year-olds. The other class has 6, 7, 8, 9 year-olds.

Each morning begins with:

9:00 **Buddy Reading** -- Children come in and begin reading with a buddy.
9:15 **Shared reading experience** using a piece of literature which is theme related.
9:30 **Students respond** to the literature which has been read in a variety of ways in their response logs.
9:45 **Centers** -- During center time, children represent their knowledge of the book read during shared reading experience, in a variety of ways. For example:

- painting
- modeling (plasticine, clay)
- drawing
- writing
- reading
- graphing
- puppets
- construction with manipulatives

10:30 **Recess**
10:45 **Students share their representations.** They bring their paintings, plays, poems, etc., and talk about how they have made sense of the story.



For younger students, their drawing, painting, coloring or building takes a different format based on their developmental levels.

After sharing orally, students return to their response logs and reflect on their learning. They follow the stem, "What I have learned.... What I still wonder about...."

Music, drama, gym, and computers integrate into the schedule.

1:00 The afternoon begins with **mathematics**.
2:00 The last portion of the day could involve a variety of areas (always **integrating subject area**).
2:45 The day ends with **reflections**: "What did you learn today?" "What do you still wonder about?"

One teacher reflects: "I used to think I had to teach and set up my classroom like everyone else. Now I feel I can approach my teaching from my own personal strengths. I'm much more confident about being myself. I notice the children seem to be more confident too."

[From: Dockendorf, M., & Close, S. (1990). *Our Primary Program: Taking the pulse.* Victoria, Province of British Columbia: Ministry of Education. Similar illustrations of class schedules from schools using multi-age grouping for young children are also available from a variety of schools throughout the United States.]

AN UNGRADED PRIMARY CLASS SCHEDULE

From Molly McClaskey's Classroom at Williston

The schedule affects how children approach a task. Do they feel hurried? Getting control of time is a major element: time for depth, breadth, and revision. Here's a sample schedule. Leave lots of big blocks!

ARRIVAL

20-30 minutes
getting comfy time
a time for 'activities'
teacher conferencing time-- checking back with yesterday's tasks
transition by music into . . .

CLASS MEETING

20 to 30 to 40 minutes depending on time of year, topic, and need
calendar
orientation to the day
opening ritual-- shared book, chart
good morning chart-- plan for the morning
structure for the day
sometimes sharing, sometimes demonstrations, sometimes problem solving
laying out a new 'piece' for the day: material, activity, a task
transition perhaps by excusing children to task areas/activity centers

WORK TIME

45 to 60 minutes
children doing their work in various areas
key words, process writing, language arts follow up (M/W)
or
math work (T/Th)
or
time for integrated unit work
(teacher record keeping)
clean up

CLASS MEETING

share what happened in the morning
assessment, critique, what happened, next steps perhaps

EAT AND RECESS

READING TIME

Silent

15 (September) to 45 (April) minutes
a time for focus and recentering
teacher observation
small group and individual conferences
Lap-sit reading
transition

Aloud

whole group/ book sharing/ book talks/ big books
transition

WORK TIME

45 to 60 minutes
social studies or science or continuation of integrated unit
record keeping

RECESS

CLASS MEETING

What did we do today? What might happen tomorrow?
Parent Communications
Singing and Final Clean-up
Close and Home

[From: Dr. Charles Rathbone, University of Vermont. Presented at the Primary School Institute, Sponsored by The Kentucky Department of Education, Louisville, KY, October 22-24, 1990.]

Early Childhood Education

Section 7:
Handout Masters--Evaluation

Chapter 1
Curriculum &
Instruction
Resource Center

List of Handout Masters

Volume II: Instructional Activities & Handouts

Section 7 Handout Masters-- Evaluation

Handout ID#	
H7-1	Desired Outcomes: Early Childhood Education
H7-2	Early Childhood Key Experiences Checklist
H7-3	NAEYC Position Statement on School Readiness
H7-4	Child Development
H7-4a	A Quick Reference Guide to Child Development
H7-4b	Child Development Ages 12 to 15 Months
H7-4c	Child Development Ages 15 to 18 Months
H7-4d	Child Development Ages 18 to 24 Months
H7-4e	Child Development Ages 2 to 2 1/2 Years
H7-4f	Child Development Ages 2 1/2 to 3 Years
H7-4g	Child Development Ages 3 to 4 Years
H7-4h	Child Development Ages 4 to 5 Years
H7-4i	Child Development Ages 5 to 6 Years
H7-4j	Child Development Ages 6 to 7 Years
H7-4k	Child Development Ages 7 to 8 Years
H7-5	NAESP Accountability Standards for Early Childhood Education
H7-6	NAEYC Position Statement on Standardized Testing of Young Children 3 Through 8 Years of Age
H7-7	Summary of Principles for Kindergarten Entry and Placement
H7-8a	NCTM Recommends Mathematical Evaluation Standards....
H7-8b	Math Evaluation Standards for All Grades
H7-9	Learning Environment Checklist for Early Childhood Programs
H7-10	Portfolio Assessment-- A Sample

Early Childhood Key Experiences Checklist

Key experiences that are fundamental to a young child's learning and development are most likely to occur in situations where the child is actively involved. They include such components as:

- the use of concrete materials
- active manipulation of objects
- freedom of choice
- rich language opportunities, and
- the provision of teacher and/or parent support.

The following checklist for use in developing and/or evaluating learning situations is based on the key experiences in child development identified in the HIGH/SCOPE curriculum [In: *Introduction to the HIGH/SCOPE Curriculum: A Two-Day Workshop*. (1986). Ypsilanti, MI: HIGH/SCOPE Educational Research Foundation.].

SOCIAL & EMOTIONAL DEVELOPMENT

___ Making & expressing choices, plans, & decisions
___ Recognizing & solving problems
___ Expressing & understanding problems
___ Taking care of one's own needs
___ Understanding routines & expectations
___ Being sensitive to other's feelings, interests, needs & background
___ Building relationships w/ other children & adults
___ Creating & experiencing collaborative play
___ Developing strategies for dealing w/ social conflict

PHYSICAL DEVELOPMENT

___ Moving in locomotor ways
___ Moving in non-locomotor ways
___ Moving with objects
___ Following movement directions
___ Describing movement
___ Expressing creativity in movement
___ Feeling & expressing rhythm & beat
___ Moving with others to a common beat

COGNITIVE DEVELOPMENT

Space

___ Fitting things together & taking them apart
___ Rearranging & reshaping objects: twisting, folding, stretching, stacking, & observing the changes
___ Observing things & places from different spatial viewpoints
___ Experiencing & describing relative positions, directions, & distances
___ Experiencing & representing one's own body
___ Learning to locate things in different environments: classroom, school, neighborhood
___ Interpreting representations of spatial relations in drawings & pictures
___ Distinguishing & describing shapes

COGNITIVE DEVELOPMENT (cont.)

Representation

___ Recognizing objects by sound, touch, taste, & smell
___ Imitating actions & sounds
___ Relating pictures, photographs & models to real places & things
___ Role-playing & pretending
___ Making models out of clay, blocks, etc.
___ Drawing & painting

Language

___ Talking w/others about personally meaningful experiences
___ Describing objects, events, & relationships
___ Having fun w/language: rhyming, making up stories, listening to poems & stories
___ Writing in various ways: drawing, scribbling, like forms, invented spellings, conventional forms
___ Having one's own language written down & read back
___ Reading in various ways: recognizing letters, words, & symbols & reading storybooks & print

Seriation

___ Comparing along a single dimension: longer/shorter, rougher/smoother, etc.
___ Arranging several things in order along the same dimension & describing the relationships: longest, shortest, etc.
___ Fitting one ordered set of objects to another through trial & error

Time

___ Starting & stopping an action on signal
___ Experiencing & describing different rates of movement
___ Experiencing & comparing time intervals
___ Observing change
___ Recalling events, anticipating events, & representing the order of events
___ Using conventional time units & observing that clocks & calendars mark the passage of time

Classification

___ Investigating & labeling the attributes of things
___ Noticing & describing how things are the same & how they are different
___ Sorting & matching
___ Using & describing something in several different ways
___ Distinguishing between some and all
___ Holding more than one attribute in mind at a time
___ Describing what characteristics something does not possess or to what class it does not belong

Number

___ Comparing number & amount: more/less, more/fewer, same amount
___ Arranging two sets of objects in one-to-one correspondence
___ Counting objects as well as counting by rote

NAEYC Position Statement on School Readiness

Adopted July 1990

Preamble

State and local efforts for educational reform and improved accountability have prompted considerable concern regarding children's "readiness" to enter kindergarten and first grade. The issue gained national prominence when the President and the nation's governors adopted it as a national education goal, vowing that "by the year 2000, all children will start school ready to learn." The construct of school readiness is based on the assumption that there is a predetermined set of capabilities that all children need before entering school. Therefore, any discussions of school readiness must consider at least three critical factors:

1) *the diversity and inequity of children's early life experiences;*

2) *the wide range of variation in young children's development and learning; and*

3) *the degree to which school expectations of children entering kindergarten are reasonable, appropriate, and supportive of individual differences.*

Position

The National Association for the Education of Young Children (NAEYC) believes that those who are committed to promoting universal school readiness must also be committed to

1) addressing the inequities in early life experience so that all children have access to the opportunities which promote school success;

2) recognizing and supporting individual differences among children; and

3) establishing reasonable and appropriate expectations of children's capabilities upon school entry.

The current construct of readiness unduly places the burden of proof on the child. Until the inequities of life experience are addressed, the use of readiness criteria for determining school entry or placement blames children for their lack of opportunity. Furthermore, many of the criteria now used as readiness measures are based on inappropriate expectations of children's abilities and fail to recognize normal individual variation in the rate and nature of development and learning. NAEYC believes it is the responsibility of schools *to meet the needs of children as they enter* and to provide whatever services are needed *in the least restrictive environment* to help each child reach his or her fullest potential.

Every child, except in the most severe instances of abuse, neglect, or disability, enters school ready to learn. However, all children do not succeed in school. A lack of basic health care and economic security places many children at risk for academic failure before they enter school. Families who lack emotional resources and support are likewise not always capable of preparing their children to meet school expectations.

It is a public responsibility to ensure that all families have access to the services and support needed to provide the strong relationships and rich experiences that prepare children to succeed in school. At a minimum such services include basic health care, including prenatal care and childhood immunizations; economic security; basic nutrition; adequate housing; family support services; and high-quality early childhood programs.

Supporting families' childrearing efforts is critically important for ensuring that more young children enter school ready to succeed. But, such efforts address only half of the problem. Attention must also be given to ensuring that the expectations used to determine readiness are legitimate and reasonable.

Expectations of the skills and abilities that young children will bring to school must be based on knowledge of child development and how children learn. A basic principle of child development is that there is **tremendous normal variability** both among children of the same chronological age and within an individual child. Children's social skills, physical development, intellectual abilities, and emotional adjustment are equally important areas of development, and each contributes to how well a child does in school. Within any group of children, it is likely that one child will possess exceptional language and social skills, but be average in physical development and emotionally less mature than is typical of the age group. Another child may have excellent skills in large and small muscle control but be less advanced in language abilities. Other children will present still different configurations of development. When readiness expectations are based on a narrow checklist focusing on only one

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or two dimensions of development, the complexity of growth is ignored and completely normal children may be judged inadequate.

Wide variability also exists in the rate of children's growth. The precise timing of when a child will achieve a certain level of development or acquire a specific skill cannot be predicted, nor does development and learning occur in a uniform, incremental fashion. Raising the legal entry age or holding an individual child out of school a year are misdirected efforts to impose a rigid schedule on children's growth in spite of normal differences.

A prevalent, fundamental misconception is that children's learning occurs in a sequential, hierarchical process and that certain basic skills must exist before later learning can occur. This misconception is the basis for requiring acquisition of such isolated skills as recognizing upper and lower case letters, counting to 20, or coloring within the lines prior to school entry. In fact, children's acquisition of higher order thinking processes and problem-solving abilities occurs in tandem with and may outpace acquisition of basic skills. For example, children are able to comprehend and compose far more complex stories than they can read or write. To focus only on sounding out letters or forming letters properly on the lines ignores children's complex language capabilities and often squelches their burgeoning interest in reading and writing. This does not mean that the acquisition of basic skills is unimportant; rather, focusing solely on isolated skills deprives children of the meaningful context that promotes effective learning.

Because learning does not occur in a rigid sequence of skill acquisition and because wide variability is perfectly normal, it is inappropriate to determine school entry on the basis of the acquisition of certain skills and abilities. Schools may reasonably expect that children entering kindergarten will be active, curious, and eager to learn. They will know about themselves, and will be interested in making new friends and sharing experiences with them. Although gaining in self-control, kindergarten children's enthusiasm will sometimes overwhelm them, as, for example, they call out an answer before the teacher calls on them. First graders, unless they have had extremely negative experiences in kindergarten, will also bring enthusiasm and curiosity to their work. Typical six-year-olds are gaining fine motor control, but for many, writing within narrow lines can still be difficult. Likewise, six-year-olds are gaining in their ability to move beyond their firsthand experiences to more abstract thought, but the here and now remains the most meaningful.

It is often assumed that tests exist to reliably determine which children are "ready" to enter school. Because of the nature of child development and how children learn, it is extremely difficult to develop reliable and valid measures of young children's abilities. When tests are used to make decisions which have such considerable impact on children's lives as denial of entry or assignment to a special class, they must offer the highest assurance of reliability and validity. No existing readiness measure meets these criteria. *Therefore, the only legally and ethically defensible criterion for determining school entry is whether the child has reached the legal chronological age of school entry.* While arbitrary, this criterion is also fair.

The nature of children's development and learning also dictates two important school responsibilities. Schools must be able to respond to a diverse range of abilities within any group of children, and the curriculum in the early grades must provide meaningful contexts for children's learning rather than focusing primarily on isolated skill acquisition.

Today not only do many kindergartens and primary grades focus on skill acquisition in the absence of meaningful context, but the expectations that are placed on children are often not age-appropriate. Whether the result of parental pressures or the push to improve student performance on standardized tests, the curriculum has shifted. Children entering kindergarten are now typically expected to be ready for what previously constituted the first grade curriculum. As a result, more children are struggling and failing.

Even those children who have received every advantage prior to school entry find the inappropriate demands difficult to meet, often experiencing great stress and having their confidence as successful learners undermined. The potentially greatest danger lies in the lowered expectations of parents who see their children struggle or fail, since parental expectations are the most powerful predictor of children's later school success.

Strategies for Schools to Succeed with Every Child

Providing a Foundation for Later Learning

Children who come to school with a history of rich experiences—being read to frequently, going to the store with their own grocery list, dictating or writing letters to grandma, taking trips to the park or the zoo, and so on—have a rich background of firsthand experience upon which later learning can be based. These experiences depend on families having the time, energy, financial, and emotional resources. Given the growing numbers of young children who spend major portions of their day outside their home in early care and education settings, it is equally critical that all early childhood programs offer these types of rich experiences as well.

Early intervention services have been successfully devised to provide families with an array of comprehensive support services to help them provide the rich environment so critical for early learning. The federally funded Head Start program is the best known example of this type of program; a number of states and communities offer variations on the theme with considerable success. Successful intervention efforts have several key elements:

1) they provide comprehensive services to ensure that a wide range of individual needs are met;

2) they strengthen parents' roles as first teachers;

3) they provide a wide array of firsthand experiences and learning activities either directly to children or through parent education.

Intervention efforts which include these critical elements are most likely to result in lasting improvements in children's achievement. Less successful are the too frequent remedial efforts in which children are drilled on isolated skills. Often, emphasis on drill and practice only causes these children to lag further behind their counterparts, because learning devoid of context is much more difficult to attain and to apply to new situations. Decontextualized learning activities lack any real meaning or challenge for the learner. Moreover, children whose background and experiences are not congruent with school expectations cannot call upon their own experiences to provide the needed context.

Making Schools Responsive to Individual Needs

Providing comprehensive services and family support to children prior to school entry will better prepare many children to succeed in school. Because of individual differences in development, however, there will always be variation in the skills and abilities of any group of children entering school. Schools and teachers must be able to respond to such variation by individualizing their curriculum and teaching practices.

Making schools more responsive to the needs of individual learners will require ensuring that teachers and administrators understand child development and how children learn. They must know how to plan and implement a developmentally appropriate curriculum that emphasizes child-initiated learning experiences as opposed to teacher lectures, small group as opposed to whole-group activities, integrated lessons as opposed to strict demarcations between subject areas, and active hands-on learning with a variety of materials and activities as opposed to drill and practice of repetitive seatwork. Rather than imposing rigid, lock-step distinctions between grades, schools must be able to offer continuous progress for children through the primary grades, recognizing that children's developmental timetables do not conform to the yearly calendar.

Making the necessary changes will require new resources and understanding. In addition to ensuring that teachers of young children have specialized training in child development and early education, class size should be reduced and additional adults available to ensure individualized instruction. Investments in classroom equipment and materials are also needed so that children have access to a wide array of materials and activities for hands-on learning.

The investment and commitment needed to ensure that every child enters school ready to succeed and that schools are ready to ensure their success will not be small. But, it is necessary. As we enter the 21st century, our human resources are our most precious commodity. For too long we have reserved educational achievement for the very few. We have used labeling and sorting mechanisms as a sieve and allowed too many children to fail. This nation can no longer afford such costly errors of omission. We must provide every child with the firm foundation so critical to school success and we must ensure that schools are prepared to meet the needs of individual children as they arrive at the school door. Only then will our nation be ready to enter the 21st century.

Sources for Additional Information

Bredekamp, S. & Shepard, L. (1989) How best to protect children from inappropriate school expectations, practices, and policies. *Young Children, 44,* (3), 14–24.

Bredekamp, S. (Ed.). (1987). *Developmentally appropriate practice in early childhood programs serving young children from birth through age 8 (expanded ed.).* Washington, DC: NAEYC.

Kamii, C. (Ed.). (1990). *Achievement testing in the early grades: The games grown-ups play.* Washington, DC: NAEYC.

National Association of Elementary School Principals. (1990). *Early childhood education and the elementary school principal: Standards for quality programs for young children.* Alexandria, VA: Author.

National Association of State Boards of Education (1988). *Right from the start: The report of the NASBE Task Force on Early Childhood Education.* Alexandria, VA: Author.

Shepard, L.A. & Smith, M.E. (1989). *Flunking grades: Research and policies on retention.* Lewes, England: Falmer Press.

Willer, B. & Bredekamp, S. (1990). Public Policy report. Redefining readiness: An essential requisite for educational reform. *Young Children, 45,* (5), 22–24.

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Child Development

In looking at the growth pattern and development of a child it is important to acknowledge the individuality of each child in regard to rate of development, style of development, and stage of development.

Rate of Development

Rate of development refers to the timetable for reaching developmental milestones. Developmental charts show the ***average*** age at which a child can perform a specific task. However, ***there is no average child.*** No one set age can be given for when a skill or ability should or will appear. Development means to unfold gradually-- each child gradually develops an ability over a range of time. A child's rate of development may differ from a chart in some or all areas. Respecting an individual child's rate of development means recognizing, appreciating, and providing opportunities for possible behaviors to occur-- it does not mean pushing the child. For example, when a child has developed some eye-hand coordination and recognition of parts to a whole, the child might be offered a simple jigsaw puzzle to explore. The child's preferences for particular activities as well as his or her success at other preliminary activities, will determine whether the child has either the ability or inclination to complete this task. In no case should anyone force or drill the child to complete the puzzle.

Style of Development

Style of development deals with the temperament of the child. Some researchers say that a baby is born with an individual temperament which stays basically the same throughout childhood. Temperament has no relation to intelligence or talent. Some children learn in an outgoing fashion. They practice new skills as they interact with others and are not bothered by mistakes. Other children learn best by practicing alone. They may not demonstrate a skill publicly until they are assured of a polished, successful performance. Some children progress with equal focus across the areas of physical, cognitive, and affective (emotional and social) development. Other children mature more rapidly in one developmental area relative to their progress in other areas.

Stage of Development

Stage of development denotes the fact that children tend to develop in a predictable sequence. Certain kinds of learning precede others. Picking up or manipulating small objects (i.e., rocks) can refine the child's pincer grip which will later be used in learning to write with a pencil. The general sequence implied by a developmental chart helps adults know what the child is likely to be ready for next and how to be helpful when presenting new developmental challenges. However, always remember that ***children develop at their own rates and in their own styles. Each child masters a skill when she or he is ready*** (Dinkmeyer,1989).

The set of developmental charts included on the following pages is based primarily on Gesell (Ames & Haber, 1985; Ames & Ilg, 1979) and pediatrician sources (McAteer, et al., 1988-1989), as well as unpublished (Loeffler, 1974) and published (*From crib to kindergarten*, 1976; Caplan & Caplan, 1983) guides. The charts offer only a *general sequence* of development and a *sample* of related activities and behaviors. As with all charts, they have to be used with caution. Children at risk may show differences in development. The selected bibliography on child development includes a number of sources specifically addressing the development of at-risk children (Bowman, 1989; Burchinal, et al., 1989; Garcia, 1986; Lee, 1989; Nielsen, 1989).

Developmentally Appropriate Curriculum

In 1987, the National Association for the Education of Young Children (NAEYC) published standards for "developmentally appropriate practice" in early childhood programs (Bredekamp). The NAEYC standards included (1) a whole child approach, (2) integrated curriculum, (3) active, experience-based instruction, (4) developmentally appropriate materials, especially manipulatives, (5) personally relevant content, (6) small-group work with opportunities for conversation, (7) cooperative learning, (8) varied teaching strategies, and (10) affective as well as cognitive development. A summary of the NAEYC standards is included on page four of this handout.

Developmental Screening and Readiness Tests

In November of 1987, The National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE) adopted a position statement entitled *Unacceptable Trends in Kindergarten Entry and Placement*. The position statement includes principles regarding several concerns. There was general concern about the "dramatic changes in what children are expected to do in kindergarten." Principle 5 addressed the misuse of developmental screening and readiness tests, and Principle 6 addressed the increasing tendancy to place disadvantaged children in segregated programs where there are lower expectations for their achievement and fewer positive peer role models. The texts of principles five and six are included on page five of this handout.

References

Ames, L. B., & Haber, C. C. (1985). *Your seven-year-old: Life in a minor key.* New York: Delacorte Press and The Gesell Institute of Child Development.

Ames, L. B., & Ilg, F. L. (1979). *Your six-year-old: Loving and defiant.* New York: Delacorte Press and The Gesell Institute of Child Development.

Bredekamp, S. (Ed.). (1987). *Developmentally appropriate practice in early childhood programs serving children from birth through age eight,* (expanded edition). Washington, DC: National Association for the Education of Young Children.

Caplan, F., & Caplan, T. (1983). *The early childhood years: The 2 to 6 year old.* New York: Perigee Books and The Princeton Center for Infancy and Early Childhood.

Dinkmeyer, Sr., D., McKay, G. D., & Dinkmeyer, J. S. (1989). *Parenting young children.* Circle Pines, MN: American Guidance Service.

From crib to kindergarten: A guide to your child's development. (1976). Indianapolis, IN: Indiana Department of Education, Division of Special Education.

Loeffler, M. H. (1974). *Development of the child.* Unpublished manuscript, Oklahoma City University.

McAteer, M., Pardieck, J., & Walters, J. L. (March 1988-June 1989). *Pediatricians' guides to child development.* (Available from Mary McAteer, M.D., Jane Pardieck, M.D., and James L. Walters, M.D., Indianapolis, IN 46256). [A series of pamphlets covering child development from birth to five years.]

National Association of Early Childhood Specialists in State Departments of Education. (November 1987). *Unacceptable trends in kindergarten entry and placement: A position statement.* Statement adopted at Annual Meeting in Chicago, IL. (ERIC Document Reproduction Service No. ED 297 856).

Summary of NAEYC Principles of Appropriate Practices for Young Children

- **Teachers must always be aware of the "whole child."**

  All areas of development are important -- physical, social, emotional, and intellectual. Children are more likely to succeed in school when the environment provides opportunities for them to physically use their bodies, make friends, and develop self-esteem as well as acquire knowledge.

- **Throughout the primary grades, the curriculum should be integrated.**

  The curriculum does not need to be divided into discrete subjects with time allotted for each. Young children can practice several skills while completing a creative activity. They can master social and cognitive skills as they work on problem-solving tasks.

- **Primary-age children should be engaged in active rather than passive activities.**

  Children learn best from firsthand, relevant experiences. Sitting silently and listening to someone else talk does not develop rich concepts.

- **The curriculum should provide many developmentally appropriate materials for children to explore and think about. The curriculum should also provide opportunities for interaction and communication with adults and other children.**

  Children learn best:
  - When they manipulate real objects rather than do pencil-and-paper or seatwork activities.
  - When they solve problems using firsthand experiences.
  - When they discuss what they have experienced with others.

- **The content of the curriculum should be relevant, engaging, and meaningful to the children themselves.**

  Children understand better when concepts and information are related to their own personal experiences.

- **Provide primary-age children with opportunities to work in small groups on projects that provide rich content for conversations. Teachers facilitate discussions among children by making comments and actively soliciting children's opinions and ideas.**

  Children acquire deeper understanding and comprehension when they complete meaningful projects over time. Research indicates that engaging children in conversations strengthens their ability to communicate and to reason.

- **Teachers recognize the importance of developing positive peer group relationships. Teachers provide opportunities and support for cooperative small group projects that not only develop cognitive ability but promote peer interaction.**

  Essential to developing a sense of one's own competence, primary-age children need to experience positive relationships and friendships with peers. Instructional practices which place undue emphasis on competition and comparison among children may stifle their motivation to learn and inhibit children's optimism concerning their own abilities and potentials.

- **The younger the children and the more diverse their background, the wider the variety of teaching methods and materials required.**

  No one teaching strategy will work for all children. Each child brings to school a unique pattern of development, learning style, and family/cultural background. Effective teachers use a variety of instructional methods and practices in a flexible manner. Effective teachers recognize that an appropriate curriculum fits the needs of the child.

- **Curriculum and teaching methods should be designed so that children not only acquire knowledge and skills but also the disposition and inclination to use them.**

  Children must acquire a love of learning as well as knowledge about the world. Children must acquire the desire to read and to do math as well as understand the mechanics. Children must want to and know how to use problem solving techniques as well as apply rote memorization skills.

[Based on: Bredekamp, S. (Ed.). (1987). *Developmentally appropriate practice in early childhood programs serving children from birth through age eight,* (expanded edition). Washington, DC: National Association for the Education of Young Children.]

Excerpts from *Unacceptable Trends in Kindergarten Entry and Placement*

Discussion of Principle 5

- **Any test used at kindergarten entrance are valid, reliable, and helpful in initial program planning and information-sharing with parents . . . They are not used to create barriers to school entry or to sort children into what are perceived to be homogenous groups.**

Kindergarten testing is a common practice in today's public schools. Unfortunately, screening and readiness tests are being used interchangeably to determine the educational fate of many young children before they enter kindergarten. Developmental screening tests broadly and briefly tap developmental domains and are designed primarily to predict future school success -- to find children who, after further assessment, appear to be good candidates for selective programs. As such, they must contain predictive validity as well as the accepted standards for all tests of reliability, validity, sensitivity, and specificity. Screening procedures should include vision, hearing, and health assessments.

Readiness tests, by definition and statistical design, do not predict outcomes and therefore cannot be substituted for such purposes. These tests assist teachers in making instructional decisions about individual children. Children who do poorly on readiness tests are likely to benefit most from the kindergarten curriculum. The paradox is that if readiness tests are substituted for developmental screening measures, these children are being channeled away from the regular classroom.

A major problem with kindergarten tests is that, of the many available, relatively few meet acceptable standards of reliability and validity. The probability of a child being misplaced based on several widely used tests is fifty percent -- the same odds as flipping a coin. . . .

Even when credible, appropriate tests are selected, kindergarten screening and developmental assessment are still uncertain undertakings because:

- Normal behavior of young children is highly variable.
- Young children are unsophisticated in generalizing from one situation to another and are novices in testing behaviors.
- Young children may not be able to demonstrate what they know and can do clearly because of difficulties in using pencils or other markers, reading, writing, responding, or certain abstract symbols.
- Separation anxiety, the time of day the test is administered, and rapport with the examiner can all distort results, especially with young children.

[From: National Association of Early Childhood Specialists in State Departments of Education. (November 11, 1987). *Unacceptable trends in kindergarten entry and placement: A position statement.* Statement adopted at Annual Meeting in Chicago, Illinois. (ERIC Document Reproduction Service No. ED 297 856).]

Excerpts from *Unacceptable Trends in Kindergarten Entry and Placement*

Discussion of Principle 6

- **All children are welcomed -- as they are -- into heterogeneous kindergarten settings . . . They are not segregated into extra-year programs prior to or following regular kindergarten.**

The responsibility of the school is to accept children with the aptitudes and skills they bring. The function of the schools is to help the child in all areas. The expectation is not that all children enter with prerequisite skills.

The dramatic growth of extra-year programs represents an attempt by the educational system to cope with an escalating kindergarten curriculum and the varied backgrounds of entering children. However, these programs often increase the risk for failure for children who come to school with the educational odds against them. Selection and placement in "transitional", "developmental", or "readiness" classes often brand the children as failures in their own eyes and those of parents, peers, and teachers.

Children placed in segregated programs often encounter lowered expectations from parents and teachers, have fewer positive peer role models for success and confidence, and lack access to the regular curriculum. For all of these reasons, their future progress tends to be more limited and many of them continue in the slow track throughout their schooling.

Heterogeneous class groupings are more likely to encourage growth for lower-functioning children than homogeneous ones. Experiences within the regular classroom should be organized so that differences among children are valued rather than being viewed as a barrier to effective instruction. Flexible peer groupings, multi-age and ungraded structures, and cooperative learning are some alternatives that can foster learning and self-esteem by valuing the gifts and talents of all children. (Bredekamp, 1987; Goodlad & Anderson, 1987; Gredler, 1984; Slavin, 1986).

References

Bredekamp, S. (Ed.) (1987). *Developmentallly appropriate practice in programs serving children from birth through age 8*, (Expanded Edition). Washington, DC: NAEYC.

Goodlad, J. I. and Anderson, H. (1987). *The nongraded elementary school.* New York: Teachers College Press.

Gredler, G. R. (October 1984). *Transition classes: A viable alternative for the at-risk child?* Psychology in the Schools. 21, 463-470.

Slavin, R. (Ed.) (1986). *Ability grouping and student achievement in elementary schools: A best-evidence synthesis.* The Johns Hopkins University Center for Research on Elementary and Middle Schools, Report No. 1. Baltimore, MD: Johns Hopkins University.

National Association of Early Childhood Specialists in State Departments of Education. (November 11, 1987). *Unacceptable trends in kindergarten entry and placement: A position statement.* Statement adopted at Annual Meeting in Chicago, Illinois.

A QUICK REFERENCE GUIDE TO CHILD DEVELOPMENT

More Discriminating in Thinking & Action • Can Enjoy Time Alone • Perseveres at Tasks • Interested in Nature • Good at Planning • Likes to Collect • Ability to Spell Lags Behind Ability to Read • Tells Time By Hours & Minutes • Greater Ability to Concentrate • Able to Sit Quietly & Listen • Serious, Worries	7 YR.
Constantly Active, Even When Sitting • Enjoys Boisterous Play • Touches, Handles, & Explores Everything in Sight • Intense Involvement in Activities, But Doesn't Always Finish Them • Brash, Aggressive, & Self-Centered • Loves to Talk • Enjoys Demonstrating Ability to Read & Count • Has Good Pronunciation, Fairly Good Grammar • Prints in Upper & Lower Case	6 YR.
Walks Backward Heel-Toe • Runs on Tiptoe • Prints a Few Capital Letters • Recognizes Own Printed Name • Laces Shoes • Plays With Others • Cuts Food With Knife • Has Vocabulary of About 2200 Words • Uses All Parts of Speech in Sentences • Less Rebellious	5 YR.
Throws Ball Over Head, Catches Bouncing Ball • Copies Circle • Points to Six Basic Colors • Knows Own Sex, Age, Last Name • Begins To Play With Other Children • Knows Simple Songs • Uses Sentences With Correct Grammar • Has Vocabulary of About 1550 Words • Impatient and Aggressive	4 YR.
Walks Up Stairs • Stands Momentarily on One Foot • Rides Tricycle • Feeds Self • Opens Door • Verbalizes Toilet Needs • Uses Vocabulary of About 900 Words • Uses Sentences of 3 to 4 Words • Constantly Asks Questions • Attempts to Please Parents and Conform to Their Expectations • Begins to Understand Time	3 YR.
Kicks Large Ball • Turns Pages In a Book • Imitates Housework • Recognizes Familiar Picture-Knows if Upside Down • Asks for Items by Name • Uses 2 or 3 Words Together Such As "More Juice" • Uses Pronouns I, Me, You • Has Vocabulary of About 300 Words • Talks Incessantly • Increased Independence From Mother • Expects Orders and Routine	2 YR.
Pulls Self to Standing--May Step With Support • Stacks Two Blocks • Gives Affection • Follows Simple Directions • May Say 2 or 3 Words, Uses One Word Sentences • Repeats Identical Sounds • Uses Expressive Jargon • Understands More Than Able to Express • Begins Trial and Error Experimentation • Recognizes But Can't Name Pictures • Speech May Lag as Concentrates on Motor Activity • Needs Constant Interaction With Caregiver • Likes Music • Loves Peek-A-Boo	1 YR.

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Child Development Ages 12 to 15 Months

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 12-15 months are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• Short legs and longer trunk tend to make movements clumsy. Average weight is 22.5 pounds, and height is 30 inches. • Begins to pull to stand by furniture; walks and stands with help, and usually begins to walk alone. Lowers self from standing to sitting position. Starts to climb to get things out of reach. Throws ball. • Can fully grasp objects. Builds 2 block tower, uses spoon, places 5 round pegs in board. Places lid on and off box, takes object out of box. Holds cup to drink, unwraps paper from cube. • Mouthing of objects almost stopped.	• Low slung jungle gym or dome climber. • Sandbox with utensils. • Tyke-bike, large hollow blocks, indoor climber and slide. • Push-pull toys, bean bags, pegboard, large beads to string, simple take-apart toys, very simple puzzles. • Rhythm toys (tin cans, drums, metal pans). • Music - likes to listen and dance. • Small manipulative objects of similar and dissimilar nature for simple classification.
COGNITIVE	• Learns through actions and feedback. Begins active trial and error experimentation. Tries out new responses to obtain same goal. Begins innovation , the essence of problem- solving behavior. • Recognizes some similarities and differences among objects. Recognizes many pictures but cannot name. • Speech may lag as dominant concentration is on motor activity. Identical sounds becoming more frequent and words (2-15) are emerging. Expressive jargon and one word sentences. Understands more than can express. • Adjusts to simple commands and questions. Begins to solicit help from adults.	• Encourage exploration by child-proofing environment. • Better to remove and distract than to say "No." • Materials with dimensions (inside, outside, larger, smaller, etc.) such as nesting cups, stacking rings, boxes and lids, wooden blocks. • Materials that stimulate auditory and other senses. • Read simple story books with textures. • Name objects in the environment (household items, body parts, clothing). • Give simple commands, "throw the ball, " "pick up the block." • Expand what child says, clarifying telegraphic speech (gestures, babbles with intonation). • Use regular words and expressive tone.

Child Development Ages 12 to 15 Months (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
AFFECTIVE	• Can communicate and perceive in others fear, anxiety, and anger. Shows affectionate and negative response to adults and children. • Loves to show off, repeats performance for laughs. Primitive sense of humor, laughs at surprise sounds and startling incongruities. • Child learns social behavior by imitation. Uses parallel play, no sharing. May inhibit release of toy to satisfy sense of possession. • Caregiver is protector and limiter. Needs consistent interaction with caregiver. Locomotion helps to test ability to separate from primary caregiver.	• Play chase games ("I'm going to get you"), and peek-a-boo, giving and taking some object. • Present toys to love, such as dolls and stuffed animals. • Avoid unnecessary separations. • Make encouragement, love and praise chief method of discipline. • Standards for acceptable behavior need to be set within the child's ability. • Consistency and self-control permit the child to learn through uniformity of experience. • Self-confidence, independence, and spontaneity are fostered by acceptance and reasonable permissive attitude.

Child Development Ages 15 to 18 Months

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 15-18 months are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• Rapid growth of arms and legs, slightly stooped posture, and prominent abdomen. Walks with a stiff gait, feet wide apart. Lacks good control of balance. Muscles develop considerably, increasing the child's strength and body weight. Exerts maximum effort to test strength. • Uses whole arm movement and may now or later develop a dominant hand preference. Experiments with hand-eye coordination, hands function independently or together. Can carry an object while engaging in motor activities. • Has potential for more precise movements as nervous system develops, although general movements are awkward. Has great desire for mobility, stands alone, climbs stairs, walks forward and backward, starts and stops but can't turn corners. • Partial regulation of bladder and bowel control. Finds pleasure in body and genital play and often rocks in bed. Naps 1-2 times daily for 1 1/2 - 2 1/2 hours. • Little perception for far off objects. Looks and attends selectively.	• Manipulative activities: scribbling, stroking and circular motions, stringing beads, nesting cups, stacking rings, hammer and peg bench, blocks, clay, sand, water, small pull and push toys, putting lids on boxes and jars, shape sorting box. • Create environment with bright colors and a variety of textures, e.g., cloth dolls, smooth blocks, etc. • Outdoor activities: large area for mobility, climb on low benches, walk on raised planks, obstacle area of sand, heavy grass, hills and hollows. • Indoor activities: stepping over sticks and colored lines, claps hands while walking, rocking chair or rocking horse.
COGNITIVE	• Short attention span, needs frequent breaks but will often return to an activity. • Eager to explore environment for the sake of exploration and discovery, becomes self-educator. Has a singleness of purpose, uses manipulations to reach objects. • Moves objects and self back and forth many times. Often varies pattern to observe different results. Size and shape perception and directive grouping begins. Knows where things are kept and returns them. • Can cause movements but learns they are dependent on the laws of the external world (i.e., gravity). Begins to understand concept of space and permanence. Can follow sequential displacement of object if object is in sight.	• Opportunities to observe people, nature and objects. Freedom to touch, handle and explore. • Needs orderly though not meticulous environment. • Allow child freedom to act independently in a stimulating environment. • Give child time to complete observations. • Simple action activities: open and close doors, handle dishes, turn knobs and handles, move objects, carry and pile blocks, drop a variety of objects to see what happens.

Child Development Ages 15 to 18 Months (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
COGNITIVE (cont.)	• Signs of individual intelligence and educational handicaps begin to appear. • Speech slows during gross motor development. Speech disorders are apt to emerge at this time. • Has a 19-22 word receptive vocabulary. Has larger receptive than expressive vocabulary. Uses expressive jargon and phrases. Puts two words together to make simple sentences, i.e., "Stove hot." Can make simple requests and begins to verbalize precepts. Realizes everything has a name. • Speaks to self out loud and is not frustrated when his speech is not understood by others. Has egocentric speech. Aware of sounds and likes to listen to interesting ones as well as their rhythms.	• Name and clarify objects and the child's actions, i.e., eating cereal. • Talk to child on an individual basis, particularly while caring for him. • Fill in and clarify telepathic speech (gestures and babbles with intonation). • Give immediate feedback reinforcing good sounds. Speak to child correctly and clearly, avoid baby talk. • Play simple command games, i.e., "bring the bag," "drop the ball." • Listen to neighborhood sounds, play imitating games, name picture cards, read short poems accompanied by pictures, actions, or songs.
AFFECTIVE	• Emotions aroused by immediate situations, are expressed, and end abruptly. Experiences fear, anxiety, distress, excitement, delight and affection for adults. Mood shifts noticeable. • Begins to understand cause and effect of actions on family members and notes their reactions. • Does not distinguish between right and wrong. • Clings possessively to primary caregiver wanting love and affection and has a desire to please. Disequilibrium occurs if life patterns are altered by hospital separations, visitors, vacations, etc. • Needs adult affection and sympathy. Tendency to suck thumb or finger may be caused by boredom or insecurity. Usually stays at one activity longer if others are near and will seek caregivers if left alone. • Ego-centric, often prefers things and activities to people. Usually has complete disregard for others after initial meeting. Autonomy and assertiveness emerge as child becomes more mobile. Aware of own individuality. • Engages in parallel play. May offer a toy to another child, but will fight if a toy is taken away.	• Manipulative activities needed to develop child's sense of competence. • Allow freedom to practice self feeding. • Clarify child's feelings in language and show empathy for emotions. • Accept child's feeling and help child to express them in a socially acceptable manner. • Allow a symbol of security, i.e., security blanket or teddy bear. • Establish and maintain routine patterns in daily life. • Primary caregiver needs to be a constant part of the child's environment and extended separation should be avoided if possible. • Situate child so able to see and be near other family members while performing their activities.

Child Development Ages 18 to 24 Months

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 18-24 months are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• Average weight increases from 25.2 lbs. - 27.5 lbs. Average height increases from 30 in. - 32 in. • Learning to walk alone and can walk up and down stairs holding onto someone's hand or onto the wall or railing. Begins to run, at first stiffly with lots of falling down. Able to jump in place and is able to stand on either foot alone when holding on. Begins to kick ball forward, at first by walking into the ball, and later by using the kicking motion. • Can throw a small ball, uses a spoon with good control, turns pages of a book, and is able to turn knobs. Able to hold a pencil or crayon well enough to scribble spontaneously. Begins, at this time or before, to show hand preference by using one hand more than the other. • Accepts new foods readily and has a great appetite, although child may become selective about foods as nears 24 months.	• Jumping from one step height to another. • Swings, short slides, climbing steps, and small rocking horses. • Opportunities for water play and sand play. • Manipulative exercises involving large twist and screw-on caps, and scooping or spooning large and medium sized objects into containers. • Encourage a variety of games that provide for running, stretching, grasping, pointing, searching or lifting.
COGNITIVE	• The child becomes able to mentally represent objects and will search for vanished objects. Aware of relationship between objects in space and between objects and self. • Recognizes self in mirror and in photos. • Receptive vocabulary explodes from approximately 20 words at 18 months to 300 words by 24 months. Comprehends simple questions, i.e., "Point to your nose?" • Differentiates between stroking and circular scribbles. • Begins the "do-it-myself" stage and is sometimes torn between wanting help from an adult or doing things alone, especially in dressing activities. Desire to imitate adult activities ("domestic mimicry") and actions (pretend coughing, sneezing). • Begins to establish concept of geometric shapes and concept of time ("just a minute," "now").	• Dress-up games in front of a full-length mirror, using daddy's hat or mommy's shoes, etc. • Opportunities to practice dressing routines (zipping, buttoning, etc). • Simple household chores (folding laundry, dusting, etc.). • Building with multi-dimensional solids, including a variety of sizes and shapes. • Manipulatives including beginner jigsaw puzzles, peg board, take apart toys, pop-it beads, large to medium beads to string. • Games which include searching for hidden objects. • Crayons and fat pencils for scribbling. • "Simon Says" games to introduce simple commands and to expand vocabulary. • Storytelling, reading, and picture books; allowing the child to browse can increase vocabulary - -caution: tearing pages is a fun game at this age (try board books)! • Riding in the car and going for walks.

Child Development Ages 18 to 24 Months (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
AFFECTIVE	• Begins to trust. Less afraid of strangers, however, may develop other fears (thunder-storms, large dogs, etc.). • Continues to demand personal attention and is a delightful, entertaining show-off. • Explores the effects of own behavior on other people and learns that different people react differently. • Unable to tolerate frustration. Temper tantrums may be triggered by frustration, anger or tiredness. • Negativistic tendency - only 50% likelihood that child will comply with request from caregiver. • Interest in playing with children and materials as a means of establishing social relationships. Modifies behavior to adjust to playmates. Continues parallel play; "mine" is a popular word. • Shy about accepting things from strangers. Hides behind caregiver or buries head in caregiver's lap. Refusal to speak. • Pulls people to show them something.	• Role-playing games (i.e., with dolls, etc.) in which the child acts out emotions. • Present appropriate or balanced attitude toward child's negativism, neither overly punitive nor overly acquiescent. • Group activities can begin modification of child's behavior to adjust to a group. • Games between two children (ball rolling) can counteract shyness and increase socialization. • Discussions about family increase conceptual awareness of family and child's relationship to it.

Child Development Ages 2 to 2 1/2 Years

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 2-2 1/2 years are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• The 2 year old is a "run-about." Usually runs rather rather than walks. • Assumes more adult-like proportions. Adult height approximately double height at 2 years of age. • Still geared to gross motor activities. Able to visually monitor walking in order to avoid obstacles in path. Also, can walk an approximate straight line and walk backwards. Goes up and down stairs with two feet on each step. Experiments with large muscle activities involving thrust or acceleration. Beginning crude 2-foot jump from a low step. Able to kick a large ball successfully. Throws large ball overhand. • Marked increases in strength, resulting in an increased smoothness of coordination in fine motor movements (e.g., able to turn puzzle pieces to fit into spaces). Eye-hand coordination is improving. • Sphincter muscles of bladder and bowel are coming under voluntary control. Appetite may be low, and there are definite preferences for certain foods.	• Needs exercise to become more efficient and graceful in movements. • Access to large playground equipment, especially swings and low slides. • Activities including, running, climbing, kicking, and throwing. • Action toys including tricycles and wagons.
COGNITIVE	• Cognitive functioning becomes more complex, more objective, and increasingly oriented toward reality. Interested in specific rather than general concepts. • Limited understanding of time (able to wait, "soon"). Anticipates routine events (nap after lunch). • Naive quantitative concepts including: bigger and smaller, more than and less than. Interested in money without understanding. • Curious about animals, people, objects, and actively explores environment by building, knocking down, emptying, pulling apart, feeling, and squeezing.	• Toys that progress from simple to complex. • Water play, with variety of objects that float or that can be used in the water (egg beater). • Sand play, with variety of containers to fill and dump. • Chalkboard, pencils, crayons, and paper. • Simple stories and rhymes. May request to hear the same story or record over and over again. • Toy telephone.

Child Development Ages 2 to 2 1/2 Years (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
COGNITIVE (cont.)	• Enjoys using manipulative skills and often chooses small objects such as beads, pebbles, and string to play with. • In drawing, imitates vertical and circular strokes. • Dramatic improvements in language ability: comprehension of questions and commands in everyday language is readily understood and may also be expressed. Talks incessantly to self or others. Vocalizes needs for toileting, food, or drink. Constructs two or three word phrases composed of nouns, pronouns (sometimes incorrectly), verbs, and adjectives (color, size). Girls surpass boys in all aspects of language development. • Gives first name; refers to self by name ("Tommy do it.")	• Naming games of body parts or objects in room or at the table. Provide many experiences using an object , verbalizing each action (e.g., show a ball, throw a ball, catch a ball, roll a ball). Child "practices" perfecting language when alone.
AFFECTIVE	• Eager to conform, strong desire to do what can do and avoids what cannot do. Likes to be a "little helper" but wants own way . • Begins to coordinate and organize own world and is very sensitive to order and routine. Likes to please others and is hurt quite easily by reprimand or disapproval. • Beginning to show sense of humor through teasing games. • Likes to control others and orders them around. Frustrates easily and may show some aggressiveness (slapping, biting). Replaces temper tantrums by using words (i.e., "I don't want to," "It's mine"). • Watches and imitates adult activities. Able to accept shared attention, as with siblings. Expresses love for caregivers.	• Allow child to perform some operations of daily routine (i.e., cleaning room, dressing self, short errand). • Caregivers can help the child obey by keeping situations simple and direct. • Allow child to express feelings. Conflict situations need to be handled with understanding and sensible techniques. • Acceptance of child's curiosity and exploration reinforces the development of important attributes such as autonomy, independence, mastery, competence, and achievement.

Child Development Ages 2 1/2 to 3 Years

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 2 1/2- 3 years are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• Birth weight quadrupled. Primary dentition (20 teeth) completed. May have daytime bowel and bladder control. • Vigorous, enthusiastic, and energetic. Very active and in perpetual motion. Jumps with both feet, stands on one foot momentarily, walks up and down stairs alone, and takes a few steps on tiptoe. Good steering ability. • Good hand-finger coordination; can move fingers independently. Moves wrist instead of using whole arm movements. Holds crayon with fingers rather than fist. • Dresses and washes self. Feeds self using spoon and sometimes a fork.	• Large muscle activities (i.e., sweeping, mopping, climbing). Tricycles, balls, and playground equipment. • Opportunities to play in sand, dirt, and water. Soap bubbles. • Blocks and legos. • Puzzles with big pieces and toys that come apart to be put together again.
COGNITIVE	• Sequencing, i.e., builds a tower of 8 cubes and aligns cubes in train. • Enjoys repetitious activity without need for end result. Enjoys order in the environment. • In drawing, imitates vertical and horizontal strokes. Makes two or more strokes for cross. • Time is event related (supper when daddy comes home). Uses words that imply past, present, and future (i.e., "yesterday," "now," "tomorrow"). • Sense of space reflected in directional words (i.e., "on," "in," "under," "behind"). • Sense of numbers is conveyed in certain words (i.e., "more," "little," "too much"). However, the child may not be able to correctly tell which of two things is bigger. • Asks many questions. Answers simple questions. Follows directions. Gives simple account of own experiences and tells stories that can be understood. Names objects and pictures in the environment.	• Crayons and fingerpaints with large sheets of paper, playdough, chalkboard. • Answer their many questions. • Organize environment with low shelves for child's things. • Read stories so child can see the pictures; help child to "read" the details of pictures by asking questions about the subjects and actions in them. • Play "label the environment" game. • Allow TV, as child is fascinated with it; however, be selective with both the kinds of programs viewed and the amount of time spent viewing.

Child Development Ages 2 1/2 to 3 Years (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
COGNITIVE (cont.)	• Uses pronouns (I, me, you) correctly. Uses plurals. Gives first and last name. • Enjoys anticipation of remembering what is coming next in favorite stories. Does not like words omitted or changed.	• Listed on front of page.
AFFECTIVE	• Learning self-identity versus social conformity. Separating "me" from "not me." • Domineering and demanding (would rather boss than be bossed) as way of commanding small part of own surroundings. Balkiness, contrariness, and aggression (hitting and screaming) may become quite extreme. May increase thumb sucking or begin to stutter as a release of tension. • Sense of humor is developing and expressed by teasing, silly behavior, and surprises. • Likes to interact with other children, but does not engage in true cooperative play. Defends (either physically or verbally) own things. Finds it hard to share or take turns. • May want to relive babyhood. May have imaginary playmates.	• Allow child to express feelings but control his actions. Rules and limits should be flexible and as few as possible, yet NEED to be there. • Since does not yet share, provide play materials that can be divided among children without limiting play of any (sand, blocks). • Maintain daily rituals and routines. • Likes rituals and demands sameness.

Child Development Age 3 to 4 Years

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 3-4 years are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• The 3 year old has entered the age of "doing." Shoulders held more erect. Protruding abdomen much reduced. • Walks up stairs using alternating feet, may still come down putting both feet on one step. Walks a straight line or curbstone; walks backwards. Swings arms freely while walking or running. • Gallops, jumps, walks, and runs to music with abandon. • Can kick a ball. Can catch a large ball with arms extended forward. Can throw a ball without losing balance. Can get up from a squatting position. • Increasing control of fingers. Adept at picking up small objects. Handles scissors to a degree. Control of pencil improving. Copies a circle; reproduces a cross if shown how. • Using both hands, can pour from pitcher to cup with little spilling. • Eyes coordinate well. Shows facility in moving eyes; can follow a moving target without losing attention. • Temporary incoordination may be observed around 3 1/2 through hand tremors, eye blinking, stuttering or stammering. These conditions may be a part of growth changes. • Better at undressing than dressing, wants to do things on own. • More susceptible to the common cold and other communicable diseases.	• Tricycles, wagons, balls (roll, toss, bounce, kick), climbing. • Scissor cutting, pencil handling, folding paper, easel painting, and fingerpainting. • Self-help skills (i.e., zipping, buttoning, buckling, teeth brushing). • Clean-up skills (i.e., sweeping, dusting).

Child Development Age 3 to 4 Years (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
COGNITIVE	• Receptive learning gained from stimuli through all senses (seeing, hearing, tasting, smelling, feeling). Physically on the move and open to stimuli. • Global perceptions narrowing, can see parts in relation to the whole, shows interest in details, sees likenesses and differences. Sorts objects by color and size. • Beginning to have a sense of direction and knows locations by citing familiar landmarks. Sense of time improved, can accurately refer to past, present, and future. • Can count by rote up to 10, but has no awareness of quantity beyond 2 or 3. Able to point to 4-6 common geometric shapes. • Uses language to get what wants. Responds to simple directions. Average vocabulary 900 words, adds 50 per month. Creates own grammar (i.e., rided for rode). • Loves to play with words (i.e., silly rhyming). Knows a few rhymes. Remembers words of common songs. Responds to words like "surprise," "secret," and "different."	• Matching and sorting objects, pictures, textures, sounds, and shapes. • Simple lotto games. • Play games that require listening and action ("put your elbow on your knee"). • Listen to books, including animal stories, alphabet books, and here-and-now stories. • Sewing cards, felt boards, and puzzles. • Introduce new points of interest in repeated activities (i.e., in pouring, name the spout or how the liquid needs to come slowly from the spout). • Encourage the child to describe steps in activity (i.e., what is first, second, etc.).
AFFECTIVE	• Desire to be independent, but wants to please others, especially parents. Beginning to identify with same sex parent, practices sex-role in play activities. • Dramatization and imagination are beginning to emerge. • Associative play: children play together, talk to each other while playing, and engage in common play activities. Beginning to learn to take turns. • Interested in babies, may want family to have one.	• Playhouse materials and costumes for dress-up. • Conversations with child regarding feelings, events, and reactions.

Child Development Age 4 to 5 Years

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 4-5 years are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• The 4 year old is at the age of "finding out." • Brain, spinal cord, and nerves reach almost full adult size by 4 to 6 years, with little growth thereafter. • Has high motor drive, takes pleasure in all locomotion activities (i.e., running, rolling, climbing, hopping, rudimentary galloping, swirling, swinging, somersaulting). Tends to be very noisy. • Walks up and downstairs one foot to a step. • Uses hands more than arms in catching a ball. Can cut on a line with a scissors. Able to color within the lines. Beginning to copy capital letters. Can carry water without spilling it. • Seems to have colds all winter, aggravated by preschool or daycare attendance.	• Outdoor play. • Construction toys (i.e., legos, blocks, etc.). • Sewing cards and stringing small beads. • Painting (finger and easel), drawing, and coloring.
COGNITIVE	• Notes likenesses and differences between two objects. Able to show biggest and longest of three things. Able to order 5 blocks from heaviest to lightest. Distinguishes parts of an object from the whole object (i.e., notes sleeve missing from coat in picture). • Talking vocabulary reaches 1550 words. Asks "why," "when," and "how" questions, and word meanings constantly. Clearly says first and last names. Uses forbidden words learned from peers (i.e., "pee pee," "poopie pants"). Loves to whisper and have secrets. • Confuses fact from fiction in story books. Tends to tell tall tales. Can be violent in storytelling (i.e., stresses death, killing, objects that crash). • Can count to 30 by rote memory. Developing a sense of time expressed through words (i.e., days, months, time to go to bed). Beginning to understand seasons and activities related to each season.	• Nature walks. • Verbal games demanding visual focus and thinking skills (i.e., "What's Missing?" "What/Who Am I Describing?"). • Matching pictures and objects. • Sequence cards. • Make up stories (i.e., "What If I...") where child adds the ending.

Child Development Age 4 to 5 Years (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
AFFECTIVE	• Has expanded sense of self, so may brag, boast, and exaggerate. Has vivid imagination. • Knows own sex. • Strong feeling for family and home. Concerned for younger children in distress or baby sibling. • Responds to verbal and physical limitations (i.e., "As far as the corner"). Has beginning awareness of "good" and "bad." • Ready for group and cooperative play, as cooperation, sharing, and taking turns comes quite easily. Can play outdoors without too much supervision. • Has tendency in play groups for division along sex lines (i.e., boys play with boys, girls with girls). Prefers companionship of children to adults.	• Dramatic play, including finger puppets, shadow plays, acting out favorite stories. • Active doll and homemaking play. • Dress-up in adult clothing and role play.

Child Development Age 5 to 6 Years

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 5-6 years are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• The 5 year old is "friendly, cooperative, and stable." Overall, this is a calm and contented time during which children feel secure about themselves and their world. • Skillful in climbing, sliding, swinging; smooth bodily control. Walks a straight line for 10 feet. Skillful on tricycle and learning to ride small bicycle. Enjoys tumble activities. • Accompanies music with actions (i.e., walks like a bear). • Handedness well established. Holds pencil, brush, or crayon in adult grasp between thumb and first finger. Able to lace shoes and learning to tie shoe laces. Able to draw a recognizable person, including arms, legs, and other details. • Relatively capable of dressing self, but may become bored and need considerable help. More successful if clothes are laid out. • May have one or two colds all winter. Beginning to build immunity.	• Gymnastics. • Hand activities: painting, coloring, cutting, pasting. • Puzzles. • Phonograph with records.
COGNITIVE	• Likes to practice intellectual abilities and show adults ability to print name, write numbers up to 5, and spell words from favorite books. • Can match numeral with quantity of objects. Has some understanding of size and quantity words (i.e., half-whole, big-little, tall-short). • Has an interest in clocks and calendars, although has not mastered telling time. Usually knows the names and sequence of the days of the week and months. • Can sort objects by size, color, shape, and category.	• Simple board games, lotto, and bingo. • Craft materials (i.e., yarn, craft sticks, construction paper) • Simple science equipment (i.e., magnets, magnifying glass, flashlight, stethoscope).

Child Development Age 5 to 6 Years (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
COGNITIVE (cont.)	• Average vocabulary of 2200 words. Uses plurals, pronouns, tenses correctly in well-constructed sentences. Recites or sings rhymes, jingles, or TV commercials. • Asks "Why" questions mainly to obtain information. Will usually ask for a definition if hears a new word. • Loves to be read to. May recognize simple words and asks frequently what letter combinations spell. Memorizes favorite stories or may act them out with friends or alone. • Interested in science and nature materials.	• Listed on first page.
AFFECTIVE	• Satisfied with staying home or being in familiar surroundings. Lives in the here-and-now with little thought to past or future. • Intent on pleasing parents and caregivers. May see mother or other primary caregiver as the favorite and most important person. • Great drive to make friends. Learning to share leadership, ideas, materials, and companions. Can assume social amenities when necessary. • Vocation interest may be envisioned and discussed (i.e., "I want to be a doctor"). • Likes to undertake only those tasks which can be accomplished successfully, thus avoiding frustration and dissatisfaction.	• Impersonation play to act out and discuss ideas. • Dolls, dollhouses (both large and small scale), dolls with accessories, miniature town with people and vehicles. • Occupational costumes for dress-up and imaginary play.

Child Development Age 6 to 7 Years

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 6-7 years are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• The 6 year old is "egocentric, expansive, and imaginative." Full of adventure, likes to experiment, and likes the new. Has boundless energy and undertakes almost anything. • Enjoys boisterous, ramble-scramble play (i.e., wrestling). Experiments with new ways of balancing body in space (i.e., climbing trees, stunts on playground equipment, swinging). Overextends self frequently in motor behaviors (i.e., swings too high, builds block constructions so high they fall down). • Touches, handles, and explores everything in sight, but there is often more activity than accomplishment. Seems to be more aware of hand as a tool. Awkward in performing fine motor tasks, yet has a new demand for such activities. Seems to be all legs and arms and coordination is not always good. • Increasingly restless, constantly active even when sitting (i.e., wriggles, bounces, may even fall off chair). Has good deal of oral activity while working (i.e., tongue extension, pencil biting or tapping). • Capable of dressing self, but often does not want to. Frequent hassles about what to wear. • Health-wise, tends to be full of physical complaints. Mucous membranes seem to be more sensitive and more easily inflamed. Communicable diseases are frequent. Tends to have many falls, cuts, bruises, and scrapes.	• Bicycle, wagon, playground equipment. • Digging, dancing, climbing, roller skating. • Tag, hide-and-seek. • Ball activities (i.e., bouncing, tossing, and catching). • Jump rope and hopscotch. • Tinker toys, legos, other construction tools. • Carpentry. • Household tasks (i.e., setting table).
COGNITIVE	• Interested in looking at an expanded world, including relationships among home, neighborhood, and entire communities. • Increasing understanding of time (time for school, time for bed) although duration of time has little meaning. Notion of time sequencing is expanding (i.e., hearing of own babyhood and those of parents'). Can sequence by holidays and has some idea of seasons.	• Dress-up play. Dolls. • Creativity generating activities (i.e., crayons, paints, clay, things to fold). • Wires, magnets, magnifying glass. • Puzzles and books.

Child Development Age 6 to 7 Years (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
COGNITIVE (cont.)	• Loves to talk - enjoys conversing and sharing thoughts. Has good pronunciation and fairly accurate grammar. • Most can read, though each at own level. Most can print the whole alphabet in both upper and lower case. Can print name. • Can count by ones to 30, by tens to 100, by fives to 50. Overestimates larger numbers (i.e., "a zillion"). Can add correctly sums within 10 and subtract differences within 5. Most interested in balanced numbers (2 and 2). Can use simple measurements. • Enjoys paper activities with a passion (i.e., cutting, drawing, coloring, pasting). Drawings are expansive and imaginative. • Uses imagination in pretend play (i.e., play house, cops and robbers). Increasing ability to differentiate fantasy and reality. Interest in magic is strong.	• Listed on first page.
AFFECTIVE	• Likely to be brash, aggressive, and self-centered. Always wants to be a winner (i.e., the best, the first, to have the most) and therefore, does not play well at competitive games. • Apt to give self-praise ("I'm certainly getting good"). Often exaggerates ability ("That's easy") when struggling with a difficult task. • Finds it difficult to accept blame, criticism, or punishment for any reason, and when things go wrong, sees it as another's fault. • Customary tension outlets range from wriggling and kicking, to sharp verbal comments ("I hate you"), to outright temper tantrums. More minor outlets may include nail biting and nose picking. • Feelings about death are becoming more emotional (i.e., may worry that parents will die and leave). However, child still tends to think of self as eternal. • Limited notion of ethical concepts. Goodness is doing specific things parents require or permit. Badness is doing things parents disapprove of or forbid. • Sex play (i.e., doctor play) is quite customary. Humor consists mostly of silly giggling over bathroom words.	• Praise is important to the child. Find events daily for which you can praise the child. • Teachers and parents can employ many techniques in dealing with uncooperative behavior (i.e., giving chances, counting, sidestepping issue, and bargaining). There is probably no age at which the use of such tech niques is moregreatly needed or more rewardingly effective.

Child Development Age 7 to 8 Years

The National Association for the Education of Young Children (NAEYC), the National Council of Teachers of Mathematics (NCTM), the National Association of Elementary School Principals (NAESP), and others have adopted standards for early childhood education which stress "developmentally appropriate" scheduling, teaching strategies, activities, and materials. Developmental characteristics of children 7-8 years are listed below. The characteristics have been taken from several sources in the child development field. The chart is meant as a general guideline; please remember that every child grows and develops at his or her own rate and that no two children are exactly alike at a given age.

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
PHYSICAL	• The 7 year old is "thoughtful, sensitive, and serious." • Physical movements are more self-contained, more restrained and more cautious. Posture is more tense and erect. • Acquires the ability to orient body and focus for skills requiring side position (i.e., bow and arrow, bat and ball). • Tends to be an observer rather than an active participant. Sits quietly and listens. Can spend hours at whatever doing (i.e., playing the piano, jumping rope, reading, or working at a workbench). • Tends to be a good and independent dresser. Likes to wear familiar clothes and not to change to new ones. • Tends to be healthier than before. May, however, complain of aches and pains (i.e., headaches, pains in knees).	• Kite flying, bow and arrow, bat and ball. • Group games such as soccer or baseball. • Jump rope, hopscotch, roller skating. • Continues pretend play with more sophistication, needs to have real tools rather than pretending to have them.
COGNITIVE	• Has greater ability to concentrate. Uses more discrimination in thinking and actions. Takes more time to mull things over and analyze them. Good at planning own activities. • Tells time by hours and minutes. Begins to know simple fractions and understands place value in number notation. Increasing ability to add, subtract, and count. Understands both size and shape, including some simple proportions (i.e., four times as heavy, twice as tall). • Fascinated with all aspects of nature. Collecting (from bottle caps to rocks) is an important pastime.	• Books, ranging from "I Can Read" books to comic books. • Following blueprints for models. • Designing fashions for paper dolls. • Copying patterns. • Computer games.

Child Development Age 7 to 8 Years (cont.)

GROWTH AREAS	CHARACTERISTICS	DEVELOPMENTALLY APPROPRIATE ACTIVITIES
COGNITIVE (cont.)	• Precise in language, says things just right and will correct self and others when speaking. Uses more adverbs. Verbalizes the negative (i.e., "I can't", "I haven't had that"). Interested in the meanings and spellings of words and likes to use pictorial dictionaries. • Generally, fair at reading and may enjoy reading silently for pleasure. Comprehends the sense of a story even without knowing all of the words. Ability to spell usually lags considerably behind ability to read. • In printing, able to form capital and lower case letters with more uniform height. Reversals and substitutions of letters are generally a thing of the past. Girls tend to be ahead of boys in evenness of size of letters and evenness of baseline. • Likes to play table games (i.e., checkers, dominoes), jigsaw puzzles, or simple card games.	• Listed on first page.
AFFECTIVE	• Calmer, more withdrawn, and easier to get along with. • Can entertain self when alone. • Frequently worries about things (i.e., "What if ..."). • Highly demanding of self, but not always able to complete tasks, even though perseveres for exhausting periods of time. May need help in knowing when to stop to avoid senseless frustration. • Concerned about self and how treated by others. Fairness is very important. When in a group, likes to be part of the group and not identified separately for either praise or blame.	• Active listening to child's complaints, hearing with understanding and accepting the concerns as real for the child.

Child Development Bibliography

Ames L. B., Gillespie, C., Haines, J., & Ilg, F. L. (1979). *The Gesell Institute's Child From One to Six: Evaluating the Behavior of the Preschool Child.* New York: Harper & Row, Publishers.

Ames, L. B., & Haber, C. C. (1985). *Your Seven-Year-Old: Life in a Minor Key.* New York: Delacorte Press and The Gesell Institute of Child Development.

Ames, L. B., & Ilg, F. L. (1979). *Your Six-Year-Old: Loving and Defiant.* New York: Delacorte Press and The Gesell Institute of Child Development.

Bowman, B. T. (October 1989). Educating Language-Minority Children: Challenges and Opportunities. *Phi Delta Kappa,* 71 (2), 118-20. [Argues that developmentally appropriate curricula cannot be standardized in a multicultural community. Explains how to use child development principles effectively.]

Brazelton, T. B. (1984). *To Listen to a Child: Understanding the Normal Problems of Growing Up.* Reading, MA: Addison-Wesley.

Bredekamp, S. (Ed.). (1987). *Developmentally Appropriate Practice in Early Childhood Programs Serving Children From Birth Through Age Eight,* (expanded edition). Washington, DC: National Association for the Education of Young Children.

Burchinal, M., & Others. (February 1989). Type of Day-Care and Preschool Intellectual Development in Disadvantaged Children. *Child Development,* 60 (1), 128-137.

Caplan, F., & Caplan, T. (1983). *The Early Childhood Years: The 2 to 6 Year Old.* New York: Perigee Books and The Princeton Center for Infancy and Early Childhood.

Children and Their Development: Knowledge Base, Research Agenda, and Social Policy Application. (February 1989). Themed issue. *American Psychologist,* 44 (2), 274-82.

Connell, D. R. (February 1990). Lessons Primary Education Can Learn From Preschool. *Executive Educator,* 12 (2), 14-15.

Crites, M. S. (1989). Child Development and Intergenerational Programming. *Journal of Children in Contemporary Society,* 20 (3-4), 33-43.

Dinkmeyer, Sr., D., McKay, G. D., & Dinkmeyer, J. S. (1989). *Parenting Young Children.* Circle Pines, MN: American Guidance Service.

Dodson, F., & Alexander, A. (1986). *Your Child: Birth to Age Six.* New York: Fireside.

Elkind, D. (1980). *Children and Adolescents: Interpretive Essays on Jean Piaget* (2nd ed.). New York: Oxford University Press.

Elkind, D. (1989). *Miseducation: Preschoolers At Risk.* New York: Alfred A. Knopf.

Elkind, D. (October 1989). Developmentally Appropriate Practice: Philosophical and Practical Implications. *Phi Delta Kappan,* 71 (2), 113-117.

Fraiberg, S. H. (1981). *The Magic Years.* New York: Charles Scribner's Sons.

From Crib to Kindergarten: A Guide to Your Child's Development. (1976). Indianapolis, IN: Indiana Department of Education, Division of Special Education.

Gardner, H. (1983). Frames of Mind: The Theory of Multiple Intelligences. New York: Basic Books.

Harbin, G. L. (1989). *Status of the States' Progress Toward Developing a Definition for Developmentally Delayed as Required by P. L. 99-457, Part H.* Chapel Hill, NC: North Carolina University, Carolina Institute for Child and Family Policy. (ERIC Document Reproduction Service No. ED 312 865)

Hartley, R. E. (November 1971). Play, the Essential Ingredient. *Childhood Education,* 80-84.

Hoffman, L. R. (1983). *Developmental Childrearing: For Parents of Children Ages Five to Ten.* Minneapolis, MN: Educational Media Corporation.

Hornak, R. T., & Carothers, L. H. (1989). *First Years Together: A Curriculum for Use in Interventions with High Risk Infants and Their Families.* Raleigh, NC: Project Enlightenment, Wake County Public School System.

Lee, M. W. (June 1989). Making Child Development Relevant for all Children: Implications for Teacher Education. *Early Child Development and Care,* 47, 63-73.

Loeffler, M. H. (1974). *Development of the Child.* Unpublished manuscript, Oklahoma City University.

McAteer, M., Pardieck, J., & Walters, J. L. (March 1988-June 1989). *Pediatricians' Guides to Child Development.* (Available from Mary McAteer,M.D., Jane Pardieck, M.D., and James L. Walters, M.D., Indianapolis, IN 46256). [A series of pamphlets covering child development from birth to five years.]

Meisels, S. J., & Steele, D. M. (in press). *Early Childhood Developmental Checklist.* (Available from the authors at the Center for Human Growth and Development, University of Michigan, (313) 747-1084)

National Association of Early Childhood Specialists in State Departments of Education. (November 1987). *Unacceptable Trends in Kindergarten Entry and Placement: A Position Statement.* Statement adopted at Annual Meeting in Chicago, IL. (ERIC Document Reproduction Service No. ED 297 856).

Nielsen, W. L. (June 1989). The Longitudinal Effects of Project Head Start on Students' Overall Academic Success: A Review of the Literature. *International Journal of Early Childhood,* 21 (1), 35-42. [Reports strong immediate effects on cognitive and socioemotional development for young children in Head Start.]

Patterson, J. (1991). *Patterson Criterion Model for a Nursery-Kindergarten Curriculum.* Cambridge, MA: Yale University.

Silber, S. (Winter, 1989). Family Influences on Early Development. *Topics in Early Childhood Special Education,* 8 (4), 1-23. [Reviews the literature on family influences on early childhood development.]

Smilansky, S., & Shefatya, L. (1990). *Facilitating Play: A Medium for Promoting Cognitive, Socioemotional and Academic Development in Young Children.* Gaithersburg, MD: Psychosocial and Educational Publications.

Smith, H. W. (1990). *Survival Handbook for Preschool Parents.* Bountiful, UT: Horizon Publishers.

White, B. L. (1991). *The First Three Years of Life.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

NAEYC Position Statement on Standardized Testing of Young Children 3 Through 8 Years of Age

Adopted November 1987

Statement of the problem

The practice of administering standardized tests to young children has increased dramatically in recent years. Many school systems now routinely administer some form of standardized developmental screening or readiness test for admittance to kindergarten or standardized achievement test for promotion to first grade. As a result, more and more 5- and 6-year-olds are denied admission to school or are assigned to some form of extra-year tracking such as "developmental kindergarten," retention in kindergarten, or "transitional" first grade (Meisels, 1987; Shepard & Smith, in press). Such practices (often based on inappropriate uses of readiness or screening tests) disregard the potential, documented long-term negative effects of retention on children's self-esteem and the fact that such practices disproportionately affect low-income and minority children; further, these practices have been implemented in the absence of research documenting that they positively affect children's later academic achievement (Gredler, 1984; Shepard & Smith, 1986, 1987; Smith & Shepard, 1987).

A simultaneous trend that has influenced and been influenced by the use of standardized testing is the increasingly academic emphasis of the curriculum imposed on kindergartners. Many kindergartens are now highly structured, "watered-down" first grades, emphasizing workbooks and other paper-and-pencil activities that are developmentally inappropriate for 5-year-olds (Bredekamp, 1987; Durkin, 1987; Katz, Raths, & Torres, undated). The trend further trickles down to preschool and child care programs that feel their mission is to get children "ready" for kindergarten. Too many school systems, expecting children to conform to an inappropriate curriculum and finding large numbers of "unready" children, react to the problem by raising the entrance age for kindergarten and/or labeling the children as failures (Shepard & Smith, 1986, in press).

The negative influence of standardized testing on the curriculum is not limited to kindergarten. Throughout the primary grades, schools assess achievement using tests that frequently do not reflect current theory and research about how children learn. For example, current research on reading instruction stresses a whole language/literacy approach that integrates oral language, writing, reading, and spelling in meaningful context, emphasizing comprehension. However, standardized tests of reading achievement still define reading exclusively as phonics and word recognition and measure isolated skill acquisition (Farr & Carey, 1986; Teale, Hiebert, & Chittenden, 1987; Valencia & Pearson, 1987). Similarly, current theory of mathematics instruction stresses the child's construction of number concepts through firsthand experiences, while achievement tests continue to define mathematics as knowledge of numerals (Kamii, 1985a, 1985b). As a result, too many school systems teach to the test or continue to use outdated instructional methods so that children will perform adequately on standardized tests.

The widespread use of standardized tests also drains resources of time and funds without clear demonstration that the investment is beneficial for children. Days may be devoted to testing (or preparing for it) that could be better spent in valuable instructional time (National Center for Fair and Open Testing, 1987).

Ironically, the calls for excellence in education that have produced widespread reliance on standardized testing may have had the opposite effect—mediocrity. Children are being taught to provide the

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one "right" answer on the answer sheet, but are not being challenged to think. Rather than producing excellence, the overuse (and misuse) of standardized testing has led to the adoption of inappropriate teaching practices as well as admission and retention policies that are not in the best interests of individual children or the nation as a whole.

Purpose

The purpose of this position statement is to guide the decisions of educators regarding the use of standardized tests. These administrative decisions include whether to use standardized testing, how to critically evaluate existing tests, how to carefully select appropriate and accurate tests to be used with a population and purpose for which the test was designed, and how to use and interpret the results yielded from standardized tests to parents, school personnel, and the media. Such decisions are usually made by school principals, superintendents, or state school officials. Teachers are responsible for administering tests and, therefore, have a professional responsibility to be knowledgeable about appropriate testing and to influence, or attempt to influence, the selection and use of tests. It is assumed that responsible and educated decisions by administrators and teachers will influence commercial test developers to produce valid, reliable, and useful tests.

Standardized tests are instruments that are composed of empirically selected items; have definite instructions for use, data on reliability, and validity; and are norm- or criterion-referenced (see definitions on page 45). This position statement addresses *tests*—the instruments themselves, and *testing*—the administration of tests, scoring, and interpretation of scores. This statement concentrates on standardized tests because such tests are most likely to influence policy. Nonstandardized assessments such as systematic observation, anecdotal records, locally or nationally developed checklists, or mastery tests developed by individual teachers (that do not meet the above criteria for standardization) play a vital role in planning and implementing instruction and in making decisions about placement of children. Decisions made on the basis of nonstandardized assessments should take into consideration the guidelines presented in this position statement.

The field of standardized testing is complex. Various types of standardized tests exist for various purposes. These include: achievement/readiness tests; developmental screening tests; diagnostic assessment tests; and intelligence tests (see definitions, page 45). The guidelines in this position sta ment apply to all forms of standardized testing, bu primarily address the uses and abuses of achievement, readiness, and developmental screening tests.

Developmental screening tests are designed to indicate which children should proceed further to a multidisciplinary assessment, only after which a decision regarding special education placement can be made. School readiness tests are designed to assess a child's level of preparedness for a specific academic program (Meisels, 1987). As such, readiness tests should *not* be used to identify children potentially in need of special education services or for placement decisions (Meisels, 1986). Diagnostic assessments are designed to identify children with specific special needs, determine the nature of the problem, suggest the cause of the problem, and propose possible remediation strategies (Meisels, 1985). Intelligence tests are norm- or criterion-referenced measures of cognitive functioning (as defined by a specific criterion or construct) and are often used in diagnostic assessment. No single test can be used for all of these purposes, and rarely will a test be applicable to more than one or two of them. The uses and abuses of diagnostic assessments and intelligence tests have been well documented elsewhere and are beyond the scope of this position statement (Chase, 1977; Goodwin & Driscoll, 1980; Gould, 1981; Hilliard, 1975; Kamin, 1974; Oakland, 1977; Reynolds, 1984).

NAEYC acknowledges and endorses the *Standards for Educational and Psychological Testing* (1985) developed by a joint committee of the American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. Standardized tests used in early childhood programs should comply with the joint committee's technical standards for test construction and evaluation, professional standards for use, and standards for administrative procedures. This means that no standardized test should be used for screening, diagnosis, or assessment unless the test has published statistically acceptable reliability and validity data. Moreover, test producers are strongly encouraged to present data concerning the proportion of at-risk children correctly identified (test sensitivity) and the proportion of those not at-risk who are correctly found to be without major problems (test specificity) (Meisels, 1984). NAEYC's position on standardized testing is intended not to duplicate, but to be used in conjunction with, the *Standards for Educational and Psychological Testing* (1985).

Statement of the position

NAEYC believes that the most important consideration in evaluating and using standardized tests is the *utility criterion:* The purpose of testing must be to improve services for children and ensure that children benefit from their educational experiences. Decisions about testing and assessment instruments must be based on the usefulness of the assessment procedure for improving services to children and improving outcomes for children. The ritual use even of "good tests" (those that are judged to be valid and reliable measures) is to be discouraged in the absence of documented research showing that children benefit from their use.

Determining the utility of a given testing program is not easy. It requires thorough study of the potential effects, both positive and negative. For example, using a readiness or developmental test to admit children to kindergarten or first grade is often defended by teachers and administrators who point to the fact that the children who are kept back perform better the next year. Such intuitive reports overlook the fact that no comparative information is available about how the individual child would have fared had he or she been permitted to proceed with schooling. In addition, such pronouncements rarely address the possible effects of failure on the admission test on the child's self-esteem, the parents' perceptions, or the educational impact of labeling or mislabeling the child as being behind the peer group (Gredler, 1978; Shepard & Smith, 1986, in press; Smith & Shepard, 1987).

The following guidelines are intended to enhance the utility of standardized tests and guide early childhood professionals in making decisions about the appropriate use of testing.

1. All standardized tests used in early childhood programs must be reliable and valid according to the technical standards of test development (AERA, APA, & NCME, 1985).

Administrators making decisions about standardized testing must recognize that the younger the child, the more difficult it is to obtain reliable and valid results from standardized tests. For example, no available school readiness test (as contrasted to a developmental screening test) is accurate enough to screen children for placement into special programs without a 50% error rate (Shepard & Smith, 1986). Development in young children occurs rapidly; early childhood educators recognize the existence of general stages and sequence of development but also recognize that enormous individual variation occurs in patterns and timing of growth and development that is quite normal and not indicative of pathology. Therefore, the results obtained on a single administration of a test must be confirmed through periodic screening and assessment and corroborated by other sources of information to be considered reliable (Meisels, 1984).

2. Decisions that have a major impact on children such as enrollment, retention, or assignment to remedial or special classes should be based on multiple scores of information and should never be based on a single test score.

Appropriate sources of information *may* include combinations of the following:

- systematic observations, by teachers and other professionals, that are objective, carefully recorded, reliable (produce similar results over time and among different observers), and valid (produce accurate measures of carefully defined, mutually exclusive categories of observable behavior);
- samples of children's work such as drawings, paintings, dictated stories, writing samples, projects, and other activities (not limited to worksheets);
- observations and anecdotes related by parents and other family members; and
- test scores, if and only if appropriate, reliable, and valid tests have been used.

In practice, multiple measures are sometimes used in an attempt to find some supporting evidence for a decision that teachers or administrators are predisposed to make regarding a child's placement. Such practice is an inappropriate application of this guideline. To meet this guideline, the collected set of evidence obtained through multiple sources of information should meet validity standards.

3. It is the professional responsibility of administrators and teachers to critically evaluate, carefully select, and use standardized tests only for the purposes for which they are intended and for which data exists demonstrating the test's validity (the degree to which the test accurately measures what it purports to measure).

Unfortunately, readiness tests (based on age-related normative data) that are designed to measure the skills children have acquired compared to other children in their age range are sometimes used inappropriately. The intended purpose of such instruments is typically to provide teachers with information that will help them improve instruction, by informing them of what children already know and the skills they have acquired. In practice, however, teachers have been found to systematically administer such tests and then proceed to teach all children the same content using the same methods; for example, testing all kindergartners and then instructing the whole group using phonics workbooks (Durkin, 1987). The practice of making placement decisions about children on the basis of the results of readiness tests is becoming more common despite the absence of data that such tests are valid predictors of later achievement (Meisels, 1985, 1987).

4. It is the professional responsibility of administrators and teachers to be knowledgeable about testing and to interpret test results accurately and cautiously to parents, school personnel, and the media.

Accurate interpretation of test results is essential. It is the professional obligation of administrators and teachers to become informed about measurement issues, to use tests responsibly, to exert leadership within early childhood programs and school systems regarding the use of testing, to influence test developers to produce adequate tests and to substantiate claims made in support of tests, and to accurately report and interpret test results without making undue claims about their meaning or implications.

Definitions

Achievement test—a test that measures the extent to which a person has mastery over a certain body of information or possesses a certain skill after instruction has taken place.

Criterion—an indicator of the accepted value of outcome performance or a standard against which a measure is evaluated.

Criterion-referenced—a test for which interpretation of scores is made in relation to a specified performance level, as distinguished from interpretations that compare the test taker's score to the performance of other people (i.e. norm-referenced).

Developmental test—an age-related norm-referenced assessment of skills and behaviors that children have acquired (compared to children of the same chronological age). Sometimes such tests are inaccurately called developmental screening tests.

Diagnostic assessment—identification of a child who has special needs, usually conducted by a multidisciplinary team of professionals; used to identify a child's specific areas of strength and weakness, determine the nature of the problems, and suggest the cause of the problems and possible remediation strategies.

Early childhood—birth through age 8.

Intelligence test—a series of tasks yielding a score indicative of cognitive functioning. Tasks typically require problem-solving and/or various intellectual operations such as conceiving, thinking, and reasoning, or they reflect an earlier use of such intellectual functions (e.g., in information questions). Standardized by finding the average performance of individuals who by independent criteria (i.e., other intelligence tests) are of known degrees or levels of intelligence.

Norms—Statistics or data that summarize the test performance of specified groups such as test takers of various ages or grades.

Norm-referenced—A test for which interpretation of scores is based on comparing the test taker's performance to the performance of other people in a specified group.

Readiness test—assessment of child's level of preparedness for a specific academic or preacademic program. (See also achievement test and developmental test.)

Reliability—the degree to which test scores are consistent, dependable, or repeatable, that is, the degree to which test scores can be attributed to actual differences in test takers' performance rather than to errors of measurement.

Score—any specific number resulting from the assessment of an individual.

Screening test (also called *developmental screening test*)—a test used to identify children who *may* be in need of special services, as a first step in identifying children in need of further diagnosis; focuses on the child's ability to acquire skills.

Standardized test—an instrument composed of empirically selected items that has definite instructions for use, adequately determined norms, and data on reliability and validity.

Testing—the administration, scoring, and interpretation of scores of a standardized test.

Utility—the relative value or usefulness of an outcome as compared to other possible outcomes.

Validity—the degree to which a test measures what it purports to measure; the degree to which a certain inference from a test is appropriate or meaningful.

Content validity—evidence that shows the extent to which the content of a test is appropriately related to its intended purpose. For achievement tests, *content* refers to the content of the curriculum, the actual instruction, or the objectives of the instruction.

Criterion-related validity—evidence that demonstrates that test scores are systematically related to one or more outcome criteria.

Predictive validity—evidence of criterion-related validity in which scores on the criterion are observed at a later date; for example, the score on a test with predictive validity will predict future school performance.

5. Selection of standardized tests to assess achievement and/or evaluate how well a program is meeting its goals should be based on how well a given test matches the locally determined theory, philosophy, and objectives of the specific program.

Standardized tests used in early childhood programs must have content validity; that is, they must accurately measure the content of the curriculum presented to children. If no existing test matches the curriculum, it is better not to use a standardized test or to develop an instrument to measure the program's objectives rather than to change an appropriate program to fit a pre-existing test. Too often the content of a standardized test unduly influences the content of the curriculum. If a test is used, the curriculum should determine its selection; the test should not dictate the content of the curriculum.

Another difficulty related to content validity in measures for young children is that many critically important content areas in early childhood programs such as developing self-esteem, social competence, creativity, or dispositions toward learning (Katz, 1985) are considered "unmeasurable" and are therefore omitted from tests. As a result, tests for young children often address the more easily measured, but no more important, aspects of development and learning.

6. Testing of young children must be conducted by individuals who are knowledgeable about and sensitive to the developmental needs of young children and who are qualified to administer tests.

Young children are not good test takers. The younger the child the more inappropriate paper-and-pencil, large group test administrations become. Standards for the administration of tests require that reasonable comfort be provided to the test taker (AERA, APA, & NCME, 1985). Such a standard must be broadly interpreted when applied to young children. Too often, standardized tests are administered to children in large groups, in unfamiliar environments, by strange people, perhaps during the first few days at a new school or under other stressful conditions. During such test administrations, children are asked to perform unfamiliar tasks, for no reason that they can understand. For test results to be valid, tests are best administered to children individually in familiar, comfortable circumstances by adults whom the child has come to know and trust and who are also qualified to administer the tests.

7. Testing of young children must recognize and be sensitive to individual diversity.

Test developers frequently ignore two important sources of variety in human experiences—cultural variations and variations in the quality of educational experiences provided for different children. It is easier to mass produce tests if one assumes that cultural differences are minimal or meaningless or if one assumes that test subjects are exposed to personal and educational opportunities of equally high quality. These assumptions permit attributing all variances or differences in test scores to differences in individual children's capacities. However, these assumptions are false.

Early childhood educators recognize that children's skills, abilities, and aptitudes are most apparent when they can be demonstrated in familiar cultural contexts. Because standardized tests must use particular cultural material, they may be inappropriate for assessing the skills, abilities, or aptitudes of children whose primary cultures differ from the mainstream. Language is the special feature of culture that creates the greatest problem for test developers. There are many language varieties in the United States, some of which are not apparent to the casual observer or test developer. Although having a common language is definitely desirable, useful, and a major goal of education, testing must be based on reality. For non-native English speakers or speakers of some dialects of English, any test administered in English is primarily a language or literacy test (AERA, APA, & NCME, 1985). Standardized tests should not be used in multicultural/multilingual communities if they are not sensitive to the effects of cultural diversity or bilingualism (Meisels, 1985). If testing is to be done, children should be tested in their native language.

Conclusion

NAEYC's position on standardized testing in early childhood programs restricts the use of tests to situations in which testing provides information that will clearly contribute to improved outcomes for children. Standardized tests have an important role to play in ensuring that children's achievement or special needs are objectively and accurately assessed and that appropriate instructional services are planned and implemented for individual children. However, standardized tests are only one of multiple sources of assessment information that should be used when decisions are made about what is best for young children. Tests may become a

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burden on the educational system, requiring considerable effort and expense to administer and yielding meager benefits. Given the scarcity of resources, the intrusiveness of testing, and the real potential for measurement error and/or bias, tests should be used only when it is clear that their use represents a meaningful contribution to the improvement of instruction for children and only as one of many sources of information. Rather than to use tests of doubtful validity, it is better not to test, because false labels that come from tests may cause educators or parents to alter inappropriately their treatment of children. The potential for misdiagnosing or mislabeling is particularly great with young children where there is wide variation in what may be considered normal behavior.

Administrators of early childhood programs who consider the use of standardized tests must ask themselves: How will children benefit from testing? Why is testing to be done? Does an appropriate test exist? What other sources of information can be used to make decisions about how best to provide services for an individual child? In answering such questions, administrators should apply the foregoing guidelines.

The burden of proof for the validity and reliability of tests is on the test developers and the advocates for their use. The burden of proof for the utility of tests is on administrators or teachers of early childhood programs who make decisions about the use of tests in individual classrooms. Similarly, the burden of responsibility for choosing, administering, scoring, and interpreting a score from a standardized test rests with the early childhood professional and thus demands that professionals be both skilled and responsible. Ensuring that tests meet scientific standards, reflect the most current scientific knowledge, and are used appropriately requires constant vigilance on the part of educators.

Selected resources

Cohen, R. (1969). Conceptual styles, culture conflict, and non-verbal tests of intelligence. *American Anthropologist, 71*(5), 828–857.

Cole, M., & Scribner, S. (1974). *Culture and thought: A psychological introduction.* New York: Wiley.

Heath, S. (1983). *Ways with words: Language, life and work in communities and classrooms.* Cambridge, England: Cambridge University Press.

Heller, K.A., Holtzman, W.H., & Messick, S. (Eds.). (1982). *Placing children in special education: A strategy for equity.* Washington, DC: National Academy Press.

References

American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. (1985). *Standards for educational and psychological testing.* Washington, DC: Author.

Bredekamp, S. (Ed.). (1987). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (exp. ed.). Washington, DC: NAEYC.

Chase, A. (1977). *The legacy of Malthus: The social cost of scientific racism.* New York: Knopf.

Durkin, D. (1987). Testing in the kindergarten. *The Reading Teacher, 40*(8), 766–770.

Farr, R., & Carey, R. (1986). *Reading: What can be measured?* Newark, DE: International Reading Association.

Goodwin, W., & Driscoll, L. (1980). *Handbook for measurement and evaluation in early childhood education.* San Francisco: Jossey-Bass.

Gould, S. (1981). *The mismeasure of man.* New York: Norton.

Gredler, G. (1978). A look at some important factors for assessing readiness for school. *Journal of Learning Disabilities, 11,* 284–290.

Gredler, G. (1984). Transition classes: A viable alternative for the at-risk child? *Psychology in the Schools, 21,* 463–470.

Hilliard, A. (1975). The strengths and weaknesses of cognitive tests of young children. In J.D. Andrews (Ed.), *One child indivisible.* Washington, DC: NAEYC.

Kamii, C. (1985a). Leading primary education toward excellence: Beyond worksheets and drill. *Young Children, 40*(6), 3–9.

Kamii, C. (1985b). *Young children reinvent arithmetic.* New York: Teachers College Press, Columbia University.

Kamin, L. (1974). *The science and politics of IQ.* New York: Wiley.

Katz, L. (1985). Dispositions in early childhood education. *ERIC/EECE Bulletin, 18*(2), 1, 3.

Katz, L., Raths, J., & Torres, R. (undated). *A place called kindergarten.* Urbana, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.

Meisels, S.J. (1984). Prediction, prevention, and developmental screening in the EPSDT program. In H.W. Stevenson & A.G. Siegel (Eds.), *Child development research and social policy.* Chicago: University of Chicago Press.

Meisels, S.J. (1985). *Developmental screening in early childhood: A guide.* Washington, DC: NAEYC.

Meisels, S.J. (1986). Testing four- and five-year-olds. *Educational Leadership, 44,* 90–92.

Meisels, S.J. (1987). Uses and abuses of developmental screening and school readiness testing. *Young Children, 42*(2), 4–6, 68–73.

National Center for Fair and Open Testing. (1987, Fall). North Carolina legislature drops exams for 1st, 2nd graders. *Fair Test Examiner,* p. 3.

Oakland, T. (Ed.). (1977). *Psychological and educational assessment of minority children.* New York: Brunner/Mazel.

Reynolds, C. (Ed.). (1984). *Perspectives on bias in mental testing.* New York: Plenum.

Shepard, L., & Smith, M. (1986). Synthesis of research on school readiness and kindergarten retention. *Educational Leadership, 44*(3), 78–86.

Shepard, L., & Smith, M. (1987). Effects of kindergarten retention at the end of first grade. *Psychology in the Schools, 24,* 346–357.

Shepard, L., & Smith, M. (in press). Escalating academic demand in kindergarten: Some nonsolutions. *Elementary School Journal.*

Smith, M., & Shepard, L. (1987). What doesn't work: Explaining policies of retention in the early grades. *Educational Leadership, 45*(2), 129–134.

Teale, W., Hiebert, E., & Chittenden, E. (1987). Assessing young children's literacy development. *The Reading Teacher, 40,* 772–776.

Valencia, S., & Pearson, P. (1987). Reading assessment: Time for a change. *The Reading Teacher, 40,* 726–732. ■

Summary of Principles for Kindergarten Entry and Placement

by the National Association of Early Childhood Specialists
in State Departments of Education

- Kindergarten teachers and administrators guard the integrity of effective, developmentally appropriate programs for young children . . .

  . . . They do not yield to pressure for acceleration of narrowly focused skill-based curricula.

- Children are enrolled in kindergarten based on their legal right to enter . . .

  . . . Families are not counseled or pressured to delay entrance of their children for a year by keeping them at home or enrolling them in preschool.

- Kindergarten teachers and administrators are informed about measurement strategies and techniques and are involved responsibly in their use . . .

  . . . They do not defer measurement decisions solely to psychometricians and test publishers.

- Retention is rejected as a viable option for young children . . .

  . . . It is not perpetuated on the basis of false assumptions as to its educational benefit.

- Any tests used at kindergarten entrance are valid, reliable, and helpful in initial program planning and information-sharing with parents . . .

  . . .They are not used to create barriers to school entry or to sort children into what are perceived to be homogeneous groups.

- All children are welcomed-- as they are-- into heterogeneous kindergarten settings . . .

  . . . They are not segregated into extra-year programs prior to or following regular kindergarten.

NCTM Recommends Mathematical Evaluation Standards for All Grade Levels That Emphasize

Increased Attention to	*Decreased Attention to*
• Assessing what students know and how they think about mathematics	• Assessing what students do not know
• Having assessment be an integral part of teaching	• Having assessment be simply counting correct answers on tests for the sole purpose of assigning grades
• Focusing on a broad range of mathematical tasks and taking a holistic view of mathematics	• Focusing on a large number of specific and isolated skills organized by a content-behavior matrix
• Developing problem situations that require the applications of a number of mathematical ideas	• Using exercises or word problems requiring only one or two skills
• Using multiple assessment techniques, including written, oral, & demonstration formats	• Using only written tests
• Using calculators, computers, & manipulatives in assessment	• Excluding calculators, computers, & manipulatives from the assessment process
• Evaluating the program by systematically collecting information on outcomes, curriculum, & instruction	• Evaluating the program only on the basis of test scores
• Using standardized achievement tests as only one of many indicators of program outcomes	• Using standardized achievement tests as the only indicator of program outcomes

From: *Curriculum and Evaluation Standards for School Mathematics*. (March 1989). Reston, VA: The National Council of Teachers of Mathematics, Inc., p. 191.

MATH EVALUATION

Standards for All Grades

In March of 1989, the National Council of Teachers of Mathematics (NCTM) published *Curriculum and Evaluation Standards for School Mathematics*. It contains an overview of trends and issues in mathematics curriculum and evaluation; curriculum standards for grades K-12; 14 evaluation standards; assumptions upon which the standards have been based; and examples of classroom applications. *Curriculum and Evaluation Standards for School Mathematics* is available from NCTM at 1906 Association Drive, Reston, VA 22091. A related publication, *Professional Standards for Teaching Mathematics,* will be available in early 1991.

The fourteen evaluation standards are listed below. **They apply to all grade levels.** Standards 1-10 are repeated on the following pages. Each standard is followed by a statement about the topic or concept and a list of indicators that may be used to identify outcomes.

NCTM Standards

General Assessment

1. Alignment
2. Multiple Sources of Information
3. Appropriate Assessment Methods and Uses

Student Assessment

4. Mathematical Power
5. Problem Solving
6. Communication
7. Reasoning
8. Mathematical Concepts
9. Mathematical Procedures
10. Mathematical Disposition

Program Evaluation

11. Indicators for Program Evaluation
12. Curriculum and Instructional Resources
13. Instruction
14. Evaluation Team

NCTM Evaluation Standards

GENERAL ASSESSMENT

Evaluation Standard 1: ALIGNMENT

Methods and tasks for assessing students' learning should be aligned with the curriculum's--

- ✔ goals, objectives, and mathematics content;
- ✔ relative emphases given to various topics and processes and their relationship;
- ✔ instructional approaches and activities, including use of calculators, computers, and manipulatives.

Evaluation Standard 2: MULTIPLE SOURCES OF INFORMATION

Decisions concerning students' learning should be made on the basis of a convergence of information obtained from a variety of sources. These sources should encompass tasks that--

- ✔ demand different kinds of mathematical thinking;
- ✔ present the same mathematical concept or procedure in different contexts, formats, and problem situations.

Evaluation Standard 3: APPROPRIATE ASSESSMENT METHODS AND USES

Assessment methods and instruments should be selected on the basis of--

- ✔ the type of information sought;
- ✔ the use to which the information will be put;
- ✔ the developmental level and maturity of the student.

NCTM Evaluation Standards

STUDENT ASSESSMENT

Evaluation Standard 4: MATHEMATICAL POWER

The assessment of students' mathematical knowledge should yield information about their--

- ability to apply their knowledge to solve problems within mathematics and in other disciplines;
- ability to use mathematical language to communicate ideas;
- knowledge and understanding of concepts and procedures;
- disposition toward mathematics;
- understanding of the nature of mathematics;
- integration of these aspects of mathematical knowledge.

Evaluation Standard 5: PROBLEM SOLVING

The assessment of students' ability to use mathematics in solving problems should provide evidence that they can--

- formulate problems;
- apply a variety of strategies to solve problems;
- solve problems;
- verify and interpret results;
- generalize solutions.

Student Assessment (cont.)

Evaluation Standard 6: COMMUNICATION

The assessment of students' ability to communicate mathematics should provide evidence that they can--

- ✓ express mathematical ideas by speaking, writing, demonstrating, and depicting them visually;
- ✓ understand, interpret, and evaluate mathematical ideas that are presented in written, oral, or visual forms;
- ✓ use mathematical vocabulary, notation, and structure to represent ideas, describe relationships, and model situations.

Evaluation Standard 7: REASONING

The assessment of students' ability to reason mathematically should provide evidence that they can--

- ✓ use inductive reasoning to recognize patterns and form conjectures;
- ✓ use reasoning to develop plausible arguments for mathematical statements;
- ✓ use proportional and spatial reasoning to solve problems;
- ✓ use deductive reasoning to verify conclusions, judge the validity of arguments, and construct valid arguments;
- ✓ analyze situations to determine common properties and structures;
- ✓ appreciate the axiomatic nature of mathematics.

Student Assessment (cont.)

Evaluation Standard 8: MATHEMATICAL CONCEPTS

The assessment of students' knowledge and understanding of mathematical concepts should provide evidence that they can--

- ✓ label, verbalize, and define concepts;
- ✓ identify and generate examples and nonexamples;
- ✓ use models, diagrams, and symbols to represent concepts;
- ✓ translate from one mode of representation to another;
- ✓ recognize the various meanings and interpretations of concepts;
- ✓ identify properties of a given concept and recognize conditions that determine a particular concept;
- ✓ compare and contrast concepts.

In addition, assessment should provide evidence of the extent to which students have integrated their knowledge of various concepts.

Evaluation Standard 9: MATHEMATICAL PROCEDURES

The assessment of students' knowledge of procedures should provide evidence that they can--

- ✓ recognize when a procedure is appropriate;
- ✓ give reasons for the steps in a procedure;
- ✓ reliably and efficiently execute procedures;
- ✓ verify the results of procedures empirically (e.g., using models) or analytically;
- ✓ recognize correct and incorrect procedures;
- ✓ generate new procedures and extend or modify familiar ones;
- ✓ appreciate the nature and role of procedures in mathematics.

Student Assessment (cont.)

Evaluation Standard 10: MATHEMATICAL DISPOSITION

The assessment of students' mathematical disposition should seek information about their--

- ✔ confidence in using mathematics to solve problems, to communicate ideas, and to reason;
- ✔ flexibility in exploring mathematical ideas and trying alternative methods in solving problems;
- ✔ willingness to persevere in mathematical tasks;
- ✔ interest, curiosity, and inventiveness in doing mathematics;
- ✔ inclination to monitor and reflect on their own thinking and performance;
- ✔ valuing of the application of mathematics to situations arising in other disciplines and everyday experiences;
- ✔ appreciation of the role of mathematics in our culture and its value as a tool and as a language.

[Adapted from: *Curriculum and Evaluation Standards for School Mathematics.* (March 1988). Reston, VA: The National Council of Teachers of Mathematics, Inc., pp. 189-247.]

The Learning Environment Checklist for Early Childhood Programs

The quality early childhood program provides a learning environment which facilitates the optimal growth and development of children, with opportunities for appropriate learning experiences through active involvement with people and materials.

Curriculum in early childhood, guided by shared goals, includes everything that happens within the program – the nature of the daily schedule, children's interactions with materials and people, the planned activities and transitions between them, and the routines of each day. The quality and arrangement *(physical setting/environment)* of the physical space, equipment, and materials have a strong influence on the types of activities and interactions which are possible, as well as on the feelings of both children and staff. Since young children learn by being active, a quality child-oriented program utilizes both planned and spontaneous activities to help children discover more about themselves and the world in which they live.

Within the physical environment, quality interactions between the staff and the child and the promotion of harmonious relationships among the children *(the interpersonal environment)* are viewed as essential to achieving the program's goals. The enhancement of self-esteem in children is accomplished through the provision of optimally challenging *learning opportunities and experiences*. A quality early childhood program recognizes that children learn to view themselves as industrious and competent when they are respected for their unique characteristics and have developmentally appropriate experiences available to them. [From: *The Indicators of Quality: Guiding the development and improvement of early childhood education programs in Nebraska*. (March 1989). Lincoln: Nebraska Department of Education.]

Indicators of Quality contains a number of checklists for measuring aspects of the learning environment. The checklist for "learning experiences" is included on the following pages.

The Learning Experiences

Met	Not Met	In Process

- The curriculum is child-centered, in that the individual needs and interests of children are considered when program goals are set.

- The program's written curriculum is available for review. It reflects the philosophy of the program and its goals for children.

- The posted daily schedule provides a balance of activities on such dimensions as:

  –indoor/outdoor;
  –quiet/active;
  –individual/small group/large group; and
  –child initiated/teacher initiated.

- A variety of developmentally appropriate, concrete, experiential learning activities are provided to:

  –promote a positive self-concept in each child;
  –develop social skills in each child;
  –encourage the child to think, reason, question, and experiment;
  –foster both receptive and expressive language development;
  –enhance each child's physical development and skills;
  –encourage sound safety, health, and nutritional practices; and
  –stimulate the child in creative expression and appreciation of the arts.

- The available activities provide opportunities for learning through exploration, guided discovery, problem solving, repetition, intuition, imitation, etc.

- Opportunities are provided for children to learn through a variety of sensory as well as verbal experiences.

The Learning Experiences (cont.)

Met	Not Met	In Process

- Transitions offer opportunities for learning and seldom require that all children move as a group from one activity to another.
- Time during the day is divided between child selected and teacher directed activities. Staff respect the child's right to choose not to participate in all activities.
- Self-help skills are taught and incorporated into the daily schedule.
- The daily routine is flexible enough to adapt to the individual needs and interests of the child.
- The staff is flexible in changing the schedule when adverse weather or other situations arise. Such changes in plans are carried out without alarming the children.
- Routine tasks are treated as opportunities to further children's learning (i.e., lunch or snack time is a period for encouraging language development, social interaction, appreciation of culturally relevant foods, self-help skills, nutrition education).
- A wide variety of child-sized, age appropriate, safe, durable learning materials and equipment is available.

  For infants, materials and equipment might include but are not limited to:
    - toys that rattle, squeak, or make noise;
    - cuddly toys, teething toys, mobiles, unbreakable objects and pictures; and
    - infant seats, crawling area, and furniture to pull self up.

  For toddlers, materials and equipment might include but are not limited to:
    - push and pull toys, stacking toys;
    - durable picture books, music;
    - pounding bench, simple puzzles;
    - play telephone, dolls, pretend toys;
    - large paper and crayons;
    - furniture to hold onto while walking; and
    - sand and water toys.

The Learning Experiences (cont.)

	Met	Not Met	In Process
For preschool and kindergarten/primary children, materials and equipment might include but are not limited to: – active play equipment for climbing and balancing; – sand and water toys; – wheel toys; – balls; – parachutes; – unit blocks and accessories; – manipulatives (puzzles, beads, pegs, games, design blocks, small building toys); – woodworking tools and materials; – basic art materials; – science materials to increase observation and communication skills as well as provide opportunities for children to learn by exploring, discovering, and experimenting; – dramatic play accessories and props; – cooking equipment; – basic math materials and games to help children discover concepts by exploration and experimentation and problem solving; – whole language materials; and – materials for music and creative movement.			✓
• Learning materials are available in sufficient quantity so that: – They can be periodically changed to provide variety; – Each child present can, at any given time, be individually involved.			
• Materials are arranged in an accessible manner to provide a clear view of what is available, promote self-selection, and encourage free exploration.			
• Opportunities to learn through play are an integral part of the daily curriculum.			

The Learning Experiences (cont.)

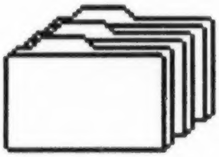
Met	Not Met	In Process

- Materials and equipment permit varied types of play/interaction.
  - More than one of each toy is available to promote parallel play.
  - Related materials are available to promote cooperative interactions.
  - Unstructured materials are available to promote symbolic play.
  - Games in various formats are available to acquaint children with the function of rules.
- Equipment and materials are available to promote both gross and fine motor development.
- Children are given opportunities throughout the day for indoor and outdoor play.
- Learning activities, materials, and equipment have been chosen to reflect and respect the diversity of races, national origins, genders, abilities, and ages in the larger society.
- The curriculum allows for and encourages involvement by parents and other members of the community as resource persons, assistants, etc.
- Field trips near and away from the program site are utilized when possible to broaden the children's base of experience and knowledge.
- Children's physical, social, emotional, and intellectual development are monitored through the daily use of observation. Any formal assessment used to monitor children's progress is age appropriate and meets accepted standards of reliability and validity.

Portfolio Assessment -- A Sample

Portfolio assessment is an alternative way to assess young children. The following list shows items that are included in the student portfolios at the Key School in Indianapolis, Indiana. Instruction at the Key School is organized around themes rather than discrete subject areas. The over-arching theme for instruction at the Key School this year was "Patterns."

Contents of a Portfolio:



Video Tape of Child Presenting and Explaining A Major Project Three Times a Year.

Video Tape and Audio Tape of Child's Oral Reading

Visual Arts

--Painting of Indian in motion including some pattern in costume or dwelling. (First time using tempera paint this year.)

--Painting of landscape-attempting to show some pattern in nature. (Children learned how to mix paints and blend them.)

--Drum made using a repeated design of Indian symbols.

--Free choice pastel showing student's concept of pattern.

--Animal picture-- Following a chosen picture showing an animal pattern, students created a drawing of their own pattern, using pastels or oil pastels.

Linguistics

-Journals: Grade 3 - spiral notebook
Grade 2 - spiral notebook and brown construction paper booklet
Grade 1 - brown construction paper booklet
-Spelling Tests: Grades 3 & 2 - unit 19 and review test
Grade 1 - unit 16
-Language Test-- Grades 3 & 2 only

Writing

--"Reflections on Indian Paintings"
--"Wishing for a Winter Wonderland"
--"My Strength"
--"Young Martin"
--"Poems on Turkey and Santa"
-- Read the Zoo Folder: Theme-- The Iguana and the Muntjac
    Grade 3 - Draw picture and write a paragraph
    Grade 2 - Draw picture and write several sentences
    Grade 1 - Draw picture and write a sentence

Logical-Mathematical

--Math skill sheets - Grade 2 has a midyear mastery test
--Photograph of a toy made from trash-to-treasure science lesson

Music

--Musical symbol test of 1 symbol
--Musical composition group picture
--Sample of student's written contribution to the group's composition on a musical pattern
--Indian rattle picture
--Rhythm pattern sample

For additional information about portfolio assessment, see:

Glazer, S. M., Searfoss, L. W., & Gentile, L. M. (Eds.). (1988). *Reexamining reading diagnosis: New trends and procedures*. Newark, DE: International Reading Association.

Mills, R. P. (December 1989). Portfolios capture rich array of student performance. *The School Administrator,* 8-11.

Paulson, F. L., Paulson, P. R., & Meyer, C. A. (February 1991). What makes a portfolio a portfolio? *Educational Leadership,* 48 (5), 60-63.

Valencia, S. W. (September 1990). Alternative assessment: Separating the wheat from the chaff. *The Reading Teacher,* 44 (1), 60-61.

Wolf, D. P. (April 1989). Portfolio assessment: Sampling student work. *Educational Leadership,* 46 (7), 35-9.